

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

GENLYTE THOMAS GROUP LLC,
a Delaware Limited Liability Company

Plaintiff,

v.

ARCHITECTURAL LIGHTING SYSTEMS a
division of ARCH LIGHTING GROUP, a
Rhode Island Corporation

Defendant.

Civil Action No. 05-CV-10945 REK

GENLYTE THOMAS GROUP LLC'S OPENING "MARKMAN" STATEMENT

Plaintiff, Genlyte Thomas Group LLC ("Genlyte Thomas"), by counsel, submits this Markman Statement to assist the Court at arriving at the proper construction of the claims of U.S. Patent No. 5,038,254 ("the '254 Patent"), pursuant to *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*) ("Markman I"), *aff'd*, 517 U.S. 370 (1996) ("Markman II").

I. **INTRODUCTION**

It is anticipated that Defendant Arch Lighting Group, Inc. ("ALS"), in light of pre-litigation correspondence and ALS' Answers to Genlyte Thomas' Interrogatories, will attempt to convince this Court to ignore Federal Circuit precedent and narrowly construe the claims of the '254 Patent in an effort to avoid infringement. Written discovery has revealed that ALS construes many claim terms by pointing to the preferred embodiment of the '254 Patent, which is improper. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.") (citing *Nazomi Comm., Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 (Fed. Cir. 2005) ("claims may embrace 'different subject matter than is illustrated in the specific embodiments in the specification'") (other

citations omitted)). The general rule established by the Federal Circuit is that claim terms are to be given their “ordinary and customary” meaning as understood by a person skilled in the lighting art. *Bell Atlantic Network Services, Inc. v. Covad Comm. Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

Although Genlyte Thomas believes the ‘254 Patent’s claim terms are clear on their face, ALS has disputed the following claim terms:

- *means for ceiling-mounting said body* (claims 1 and 3)
- *oriented to direct light* (claims 1 and 3)
- *downwardly* (claims 1 and 3)
- *a selected reading area* (claims 1 and 3)
- *downwardly and outwardly* (claims 1 and 3)
- *reflected back* (claims 1 and 3)
- *broad area* (claims 1 and 3)
- *a selected patient examination area* (claim 3)
- *reflector* (claims 2 and 4)
- *fluorescent assembly* (claims 4, 5 and 7)
- *light distribution pattern* (claims 5 and 7)
- *glare* (claims 13 and 14)

Any attempt by ALS to convince this Court to accept a construction for these claim terms that is narrower than the ordinary and customary meaning as understood by one ordinarily skilled in the art is unwarranted and must be rejected. To aid this Court, Genlyte Thomas follows Federal Circuit precedent and provides, *infra* Part III, a proper construction for these claim terms.

A. History Of The ‘254 Patent

The ‘254 Patent is directed to a medical light system containing multiple light fixtures within an integrated ceiling-mounted body to provide the different illuminations required for a hospital patient bed. The ‘254 Patent and its prosecution history are attached as Exhibits 1 and 2.

Those skilled in the medical lighting art recognize that the ‘254 Patent is a pioneering patent. As such, it is one of Genlyte Thomas’ most valuable pieces of intellectual property. It is

a pioneering patent because it revolutionized the manner in which patient hospital beds are illuminated. This is best illustrated by *The Illuminating Engineering Society of North America Lighting Handbook* (“IESNA Handbook”). Prior to the filing of the ‘254 Patent, the 1987 IESNA Handbook illustrated the state of the art as to medical patient bed lighting. (Statement of Thomas M. Lemons A Person Skilled In The Lighting Arts [“Lemons’ Statement”], attached hereto as Exhibit 3, at p.7 and Exhibit C). As can be seen in the IESNA Handbook, the state of the art in 1987 consisted of multiple, separate fixtures to provide the needed differing types of illumination for a patient bed. After issuance of the ‘254 Patent, however, beginning with the 1993 and continuing through the most recent editions, the IESNA Handbook illustrates a change in the state of the art as to medical patient bed lighting. As can be seen, the state of the art is now Genlyte Thomas’ product, consisting of the integrated, ceiling-mounted lighting system made in accordance with the ‘254 Patent. (Exhibit 3 at p. 7 and Exhibit D). Indeed, so novel are the inventions disclosed and claimed in the ‘254 Patent that it issued on a rare first office action from the United States Patent and Trademark Office (“PTO”) without any rejections or objections.

B. Background of a Patent

A patent has two basic components, the “written description” or “specification” and the “claims.”¹ The “specification” is a written description of the invention in such “clear, concise and exact terms” to teach those skilled in the art how to make and use the invention set forth in the patent, 35 U.S.C. § 112 ¶1, and the “claims,” are the “distinct[]”portion where the inventor “particularly point[s] out” that which he “regards as his invention.” 35 U.S.C. § 112, ¶2.

¹ Although the terms “written description” and “specification” are often used interchangeably, they are not co-extensive. The specification contains the claims as well as the written description. See 35 U.S.C. § 112. In this Statement, we will use the term “specification” except where context mandates use of “written description.”

The claims, numerically listed at the end of an issued patent, measure the scope of the patentee's right to exclude. *A.B. Dick Corp. v. Burroughs Corp.*, 713 F.2d 700, 702 (Fed. Cir. 1983); *see also* 35 U.S.C. § 271. The claims control the determination of infringement. *Phillips*, 415 F.3d at 1312.

C. Determining Patent Infringement

Determining patent infringement is a two step inquiry. *Markman I, supra*, 52 F.3d at 976. First, the court must construe the meaning of the claim terms as a matter of law, without the aid of the jury -- the goal of the present "Markman" proceedings. *Markman II, supra*, 517 U.S. at 372. The Federal Circuit states that "the construction of claims is simply a way of elaborating the normally terse claim language: in order to understand and explain, but not to change, the scope of the claims." *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed. Cir. 1991).

Then, the fact finder (in this case, the jury) applies the properly construed claims to the accused device to determine if any one claim "reads on" the accused device. *Allen Eng'g Corp. v. Bartell Indus. Inc.*, 299 F.3d 1336, 1345 (Fed. Cir. 2002). If so, there is infringement.

II. PRINCIPLES OF CLAIM CONSTRUCTION (*Phillips v. AWH Corp.*)

The function of claim construction is to "understand and explain" the claim language, "not to change the scope of the claims." *Scripps Clinic*, 927 F.2d at 1580 (emphasis supplied). As recently explicated, *en banc*, in its seminal opinion, *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), the Federal Circuit held that "it is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (emphasis supplied; citations omitted). The *Phillips* Court stated:

That principle has been recognized since at least 1836, when Congress first required that the specification include a portion in

which the inventor “shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery.” In the following years, the Supreme Court made clear that the claims are “of primary importance, in the effort to ascertain precisely what it is that is patented.” Because the patentee is required to “define precisely what his invention is,” the Court explained, it is “unjust to the public, as well as an evasion of law, to construe it in a manner different from the plain import of its terms.”

Id. (internal citations omitted); *see also Cont’l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 419 (1908) (“the claims measure the invention”); *McCarty v. Lehigh Valley R.R. Co.*, 160 U.S. 110, 116 (1895) (“if we once begin to include elements not mentioned in the claim, in order to limit such claim . . . , we should never know where to stop”); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339 (1961) (“the claims made in the patent are the sole measure of the grant”); *Smiths Industries Medical Sys., Inc. v. Vital Signs, Inc.*, 50 USPQ2d 1641 (Fed. Cir. 1999), *superseded on reh’g*, 183 F.3d 1347, 1357 (Fed. Cir. 1999) (“It is improper to import [a] limitation ‘under pressure’ from the written description into the claim because the claim language is clear on its face.”) (other citations omitted).

Genlyte Thomas expects ALS to ignore the “bedrock” principle discussed above in *Phillips*. Instead, ALS’ position will seek to narrow the scope of the ‘254 Patent by reading the preferred embodiment of the ‘254 Patent into the claims. This attempt must fail. *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 973 (Fed. Cir. 1999) (concluding that the specification described a preferred embodiment and not the invention *per se* and refusing to limit the scope of the claims to the preferred embodiment).

A. The Role Of Intrinsic Evidence In Claim Construction

As mandated by *Phillips*, consideration of a patent’s intrinsic evidence, as viewed by one of ordinary skill in the art, is paramount in claim construction. *Phillips*, 415 F.3d at 1313.

1. Claim Language

The starting point for claim construction is always the language of the claims themselves. *Phillips*, 415 F.3d at 1312; *see also Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998) (“claim construction . . . begins and ends in all cases with the actual words of the claim”). Generally, the words of a claim are given their ordinary and customary meaning as understood by one of skill in the art at the time of the invention. This inquiry into how one skilled in the art understands the claim terms is the starting point for claim construction. *Phillips*, 415 F.3d at 1312-13. As the Federal Circuit has made clear, patents are teaching documents directed to those skilled in the art, not to the general public, attorneys or judges. *Id.* at 1313 (quoting *In re Nelson*, 280 F.2d 172, 181 (C.C.P.A. 1960)); *W.L. Gore Assoc. v. Garlock*, 721 F.2d 1540, 1556 (Fed. Cir. 1983).

When making such a determination, those skilled in the art are “deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313. The words of the claims, both asserted and unasserted, are examined in the context of the surrounding language. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

2. Heavy Presumption That Claim Terms Carry Their Ordinary and Customary Meaning

There is a “heavy presumption” that claim terms carry their “ordinary and customary” meaning. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *Phillips*, 415 F.3d at 1312 (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’”). An accused infringer cannot narrow patent claims (as ALS is doing) and overcome this presumption “simply by pointing to the preferred embodiment or other structures . . . disclosed in the specification or prosecution history.”

Brunswick, 288 F.3d at 1366 (citing *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989-90 (Fed. Cir. 1999)).

In cases like the ‘254 Patent, the Federal Circuit instructs that “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314 (citing *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001) (“claims did ‘not require elaborate interpretation’”)).

The claim terms of the ‘254 Patent do not require construction beyond their ordinary and customary meaning as understood by one skilled in the art. To aid the Court, Lemons’ Statement is submitted herewith to provide the perspective of one skilled in the art to which the ‘254 Patent pertains.

3. The Preferred Embodiment Does Not Limit The Claims

ALS’ seeks to rewrite and unjustly limit the claims of the ‘254 Patent by pointing to the preferred embodiment. However, a court must refrain from reading limitations from the preferred embodiment set forth in the specification (which usually expresses the patentee’s compliance with the “best mode”² requirement of 35 U.S.C. § 112) into a claim. As *Phillips* explains:

[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments. In particular, we have

² 35 U.S.C. § 112, in the pertinent part, states:

“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”

expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. That is not just because section 112 of the Patent Act requires that the claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments.

415 F.3d at 1323 (emphasis supplied and internal citations omitted). The *Phillips* Court provides further guidance stating:

To avoid importing limitations from the specification into the claims, it is important to keep in mind the purposes of the specification are to teach and enable those of skill in the art to make and use the invention and to provide a best mode for doing so. One of the best ways to teach a person of ordinary skill in the art how to make and use the invention is to provide an example of how to practice the invention in a particular case.

Id. (other citations omitted). In fact, the ‘254 Patent expressly warns that the invention is not to be limited to the preferred embodiment:

Although a single preferred embodiment of the invention has been disclosed and described in detail herein, it should be understood that this invention is in no sense limited thereby and its scope is to be determined by that of the appended claims.

(Exhibit 1, Col. 3, Lines 30-35).

Under this language, a court must not limit the scope of the claims to the preferred embodiment no matter how vigorously urged by an accused infringer. This is true even where the preferred embodiment is the only embodiment described. *Elkay Manuf. Co. v. Ebco Manuf. Co.*, 192 F.3d 973, 978 (Fed. Cir. 1999) (refusing to use the sole disclosed embodiment to limit the scope of the claims and stating that “[t]he general rule, of course, is that the claims of a patent are not limited to the preferred embodiment, unless by their own language”); *see also*

Karlin Tech., 177 F.3d at 973. ALS will ignore this principle of claim construction and will attempt to import additional limitations from the preferred embodiment into the claims at issue.

4. Patent Specification

Phillips cites to the patent specification as “the single best guide to the meaning of a disputed term” and thus, “highly relevant to the claim construction analysis.” *Phillips*, 415 F.3d at 1315 (quoting *Vitronics*, 90 F.3d at 1582). However, when reviewing the specification, a court must guard against reading limitations from the specification into the claims. *Id.* at 1323; *see also Legett & Platt, Inc. v. Hickory Springs Manuf. Co.*, 285 F.3d 1353, 1357 (Fed. Cir. 2002) (“In consulting the specification, . . . the interpretative process may not import limitations from the specification into the defining language of the claims.”).

5. Patent Prosecution History

The prosecution history of a patent can play a role in arriving at a correct construction of disputed claim terms. *See Markman I, supra*, 52 F.3d at 980. “[T]he prosecution history provides evidence of how the PTO and the inventor understood the patent.” *Phillips*, 415 F.3d at 1317. Here, however, there exists virtually no patent prosecution history for the ‘254 Patent because the patent issued by the PTO on the first office action. Thus, the prosecution history has no limiting effect on the ‘254 Patent, highlighting its broad scope.

B. Extrinsic Evidence Is Substantially Subordinate To Intrinsic Evidence

Extrinsic evidence constitutes all evidence outside the patent and its prosecution history. *Markman I, supra*, 52 F.3d at 980. Although extrinsic evidence may sometimes be helpful in understanding the relevant art, *Phillips* emphasized that it is “less significant” and “less reliable” than intrinsic evidence in determining the meaning of claim terms. *Phillips*, 415 F.3d at 1317-18. Nonetheless, *Phillips* also recognized the value of expert testimony:

[E]xpert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent filed.

Phillips, 415 F.3d at 1318 (citing *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308-09 (Fed. Cir. 1999)). Lemons' Statement is presented to show how the claim terms of the '254 Patent are understood by one skilled in the art and, therefore, is useful to the Court for the purposes outlined in *Phillips*. (See Exhibit 3).

C. "Means-Plus-Function" Claim Terms

"Means-plus-function" is a claim format statutorily permitted under 35 U.S.C. § 112, ¶6 (hereinafter "112/6"), where such a clause recites a "function to be performed rather than definite structure or materials for performing that function." *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1307 (Fed. Cir. 1998). The '254 Patent contains one "means-plus-function" claim term: "means for ceiling-mounting said body."

1. Means-Plus-Function Construction Rules

If a claim term is governed by 112/6, the Federal Circuit requires the court to employ two steps to interpret the term. First, the court must "identify the function explicitly recited in the claim." *Asyst Tech., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1369 (Fed. Cir. 2001) (citing *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed. Cir. 2001)). Second, the court must "identify the corresponding structure set forth in the written description that performs the particular function set forth in the claim." *Id.* Both inquiries are a question of law. *Chiuminatta, supra*, 145 F.3d at 1308.

a. Identifying the Function

In identifying the function of a means-plus-function element, the Court must look to the claim language itself. As the Federal Circuit has held, a court may not construe a “means-plus-function claim by adopting a function different from that explicitly recited in the claim.” *Micro Chemical, Inc. v. Great Plains Chemical Co., Inc.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999). The functional terms themselves are interpreted according to ordinary principles of claim construction, as discussed above. *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1334 (Fed. Cir. 2004); *see also Wenger Manuf., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) (a court “may not import functional limitations that are not recited in the claim”).

b. Identifying the Structure

After properly identifying the function, the Court must then identify the structure that corresponds to the claimed function. This identification of structure is performed from the perspective of a person of ordinary skill in the art. *Atmel Corp. v. Information Storage Devices*, 198 F.3d 1374, 1378-79 (Fed. Cir. 1999). From this perspective, the Court must identify the structure set forth by the specification which corresponds to the identified function. *Asyst, supra*, 268 F.3d at 1369.

With respect to the “means for ceiling-mounting said body” element of the ‘254 Patent, ALS will attempt to convince this Court that the claim term is indefinite and, therefore, the patent is invalid. In making such an argument, however, ALS will again have to ignore the above Federal Circuit precedent. In fact, as shown below in Part III.A., the specification of the ‘254 Patent, from the perspective of one skilled in the art, sets forth the necessary structure for “ceiling-mounting said body.”

III. CONSTRUCTION OF THE ‘254 PATENT

In this section, Genlyte Thomas addresses the claim terms at issue and sets forth the proper construction of the claim terms based on Federal Circuit precedent.

A. Means For Ceiling-Mounting Said Body Is Properly Construed To Cover A Flange And/Or Mounting Holes And Equivalents Thereof

As evidenced by the claim term itself, the function to be performed is “ceiling-mounting said body,” so this term must be construed to cover the structure set forth in the patent specification, from the perspective of a person of ordinary skill in the art, for performing that function. *Atmel Corp.*, 198 F.3d at 1378-79.

The ‘254 Patent teaches that the light system is configured to “replace a conventional troffer.” (Exhibit 1, Col. 3, Lines 13-14). A person skilled in the art knows a troffer to be a ceiling-mounted structure having (1) a flange for recessed installation in a ceiling (typically a lay-in grid ceiling or a drywall ceiling) and/or (2) mounting holes for mounting the fixture to the surface of a ceiling or other structure. (Exhibit 3 at pp. 3-4). Consequently, “means for ceiling-mounting said body” must be construed to cover a flange and/or mounting holes, and equivalents thereof. *See Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1324 (Fed. Cir. 2001) (“the claim must be construed to cover the structure disclosed in the specification as performing that function and equivalents thereof”) (citing *Kahn v. General Motors Corp.*, 135 F.3d 1472, 1476 (Fed. Cir. 1998)).

B. Oriented To Direct Light Is Properly Construed As “To Set Or Arrange To Direct Light”

“Oriented to direct light” appears in the claims of the ‘254 Patent in the following context: “a first [second or third] light fixture within said body *oriented to direct* light downwardly [downwardly and outwardly] . . .” (Exhibit 1, Col. 3, Lines 40-41, 43-44, 57-58 and

60-61; Col. 4, Lines 1-2). The ordinary and customary meaning of the claim term “oriented to direct light,” as supported by the intrinsic evidence and Lemons’ Statement, is “to set or arrange to direct light.”

This construction is supported by the specification of the ‘254 Patent. The specification teaches that the first light fixture of the preferred embodiment provides light to a reading area (Exhibit 1, Col. 2, Lines 45-46) and that the second light fixture and third light fixture of the preferred embodiment provide light to a vertical wall surface and to an examination area, respectively. (Exhibit 1, Col. 2, Line 54; Col. 3, Lines 8-9). Consequently, for light to reach the “reading area”, “vertical wall” or “examination area”, the fixtures must be “set or arranged to direct” light in that direction (i.e., “downwardly” or “downwardly and outwardly”). As further support, Lemons states that this claim term means that the fixture (within the integrated light system) is “set or arranged to direct illumination.” (Exhibit 3 at p. 4).

C. Downwardly Is Properly Construed As “A Direction Below The Light System”

“Downwardly” appears in the claims of the ‘254 Patent in the following context: “oriented to direct light *downwardly* to a selected reading area under said body [*downwardly* under said body to a selected patient examination area].” (Exhibit 1, Col. 3, Lines 40-42 and 57-59; Col. 4, Lines 1-3). The ordinary and customary meaning of the claim term “downwardly,” as supported by the intrinsic evidence and Lemons’ Statement, is “a direction below the light system.”

In relation to the claim limitation “downwardly,” claims 1 and 3 of the ‘254 Patent further claim, in part, a ceiling-mounted light system. (Exhibit 1, Col. 1, Lines 39 and 56). Moreover, the preferred embodiment is stated to have a “first light fixture” which directs light to the “forward portion of the patient’s bed” or the “reading area of the bed.” (Exhibit 1, Col. 2,

Lines 4-5 and 45-46). Similarly, the preferred embodiment is stated to have a “third light fixture” which illuminates the “entire area of the bed”. (Exhibit 1, Col. 2, Lines 10-17; Col. 3, Lines 4-7). Therefore, consistent with the above, the light system, including the first and third light fixtures, is mounted over the patient bed and because the first and third light fixtures send light to an area below the bed (i.e., the reading area or the patient examination area), light travels “downwardly” or in “a direction below the light system.”

This construction is further supported by Mr. Lemons. Consistent with the patent specification Mr. Lemons states that “downwardly” means “a direction below the luminaire.” (Exhibit 3 at p. 4).

D. A Selected Reading Area Is Properly Construed As “An Area Below The Light System In Which A Person May Read”

The claim term “a selected reading area” appears in the claims of the ‘254 Patent in the following context: “a first light fixture . . . oriented to direct light downwardly to *a selected reading area* under said body.” (Exhibit 1, Col. 3, Lines 40-42 and 57-59; Col. 4, Lines 1-3). The ordinary and customary meaning of this claim term, as supported by the intrinsic evidence and Lemons’ Statement, is “an area below the light system in which a person may read.”

The specification of the ‘254 Patent teaches in the “Objects and Summary of the Invention” section that the reading or first light fixture illuminates “an area appropriate for a patient reading in bed.” (Exhibit 1, Col. 1, Lines 45-47). This section further teaches that the first light fixture of the preferred embodiment “direct[s] light toward the forward portion of the patient’s bed so as to allow a patient to read comfortably.” (Exhibit 1, Col. 2, Lines 3-6). The “Detailed Description of the Preferred Embodiment” section of the ‘254 Patent teaches that the reading area of the preferred embodiment is generally the large area identified in Figure 1 of the ‘254 Patent as area **400**. (Exhibit 1, Col. 2, Lines 45-47; Figure 1). And, as previously

discussed, the preferred embodiment is taught to be a multi-function, integrated light system ceiling-mounted over a patient bed. (Exhibit 1, Col. 1, Lines 62-68; Col. 2, Lines 30-33).

Therefore, consistent with the above, the claim term “selected reading area” means “an area below the light system in which a person may read.”

Such a construction is further supported by Mr. Lemons. Consistent with the above, the Lemons Statement identifies that the “selected reading area” is “a zone where a patient reads material.” (Exhibit 3 at p. 5).

E. *Downwardly and Outwardly* Is Properly Construed As “A Direction Below And Away From The Light System”

“Downwardly and outwardly” appears in the claims of the ‘254 Patent in the following context: “oriented to direct light *downwardly and outwardly* to a vertical wall surface outwardly adjacent from said body . . .” (Exhibit 1, Col. 3, Lines 43-46 and 60-63). The term “downwardly and outwardly,” as supported by the intrinsic evidence and Lemons’ Statement, means “a direction below and away from the light system.”

In relation to the claim limitation “downwardly and outwardly,” claims 1 and 3 of the ‘254 Patent further claim, in part, a ceiling-mounted light system. (Exhibit 1, Col. 1, Lines 39 and 56). Additionally, the claims of the ‘254 Patent claim a vertical wall surface “outwardly adjacent from said body” of the light system. Similarly, the preferred embodiment teaches that the light system “abuts the wall-ceiling (300, 100, respectively) interface directly over the head of bed 200.” (Exhibit 1, Col. 2, Lines 37-40). And, the preferred embodiment is stated to have a “second light fixture . . . to direct light toward a vertical wall abutting the head of the patient’s bed . . .” (Exhibit 1, Col. 2, Lines 6-9). Therefore, consistent with the above, the light system, including the second light fixture, is mounted over the patient bed and the second light fixture

sends light, in part, to a vertical wall outwardly adjacent to the light system, which means light travels “downwardly and outwardly” or in “a direction below and away from the light system.”

This construction is further supported by Mr. Lemons. Consistent with the patent specification Mr. Lemons states that “downwardly and outwardly” means “a direction below and away from center.” (Exhibit 3 at p. 5).

F. *Whereby Light Is Reflected Back* Is Properly Construed As “Whereby Light Is Redirected”

“Whereby Light is reflected back” appears in the claims of the ‘254 Patent in the following context: “*whereby light is reflected back* to a broad area under said body.” (Exhibit 1, Col. 3, Lines 46-47 and 63-64). This claim term, as supported by the intrinsic evidence and Lemons’ Statement, means “whereby light is redirected.”

In relation to the claim limitation “reflected back,” claims 1 and 3 of the ‘254 Patent further claim, in part, that light is “direct[ed] . . . outwardly to a vertical wall surface outwardly adjacent from said body” (Exhibit 1, Col. 3, Lines 44-45 and 61-62). Further, the specification of the ‘254 Patent teaches that light from the ambient fixture will “reflect or bounce light from [the] wall.” (Exhibit 1, Col. 2, Lines 53-54). Consistent with these teachings, it is clear that light from the “second light fixture” of claims 1 and 3 is “reflected back” from the vertical wall or, in other words, the light strikes the vertical wall and is “redirected” to the broad area under the light system. This construction is further supported by Mr. Lemons. Consistent with the patent specification Mr. Lemons explains that “reflected back” is “the redirection of light by a surface.” (Exhibit 3 at p. 5).

G. *Broad Area* Is Properly Construed As “A Large Area”

“Broad area” appears in the claims of the ‘254 Patent in the following context: “whereby light is reflected back to a *broad area* under said body.” (Exhibit 1, Col. 3, Lines 46-47 and 63-

64). The term “broad area,” as supported by the intrinsic evidence and Lemons’ Statement, means “a large area.”

The “Abstract” of the ‘254 Patent states that the ambient light reflects off of the vertical wall “to the vicinity of the hospital bed.” (Exhibit 1, Abstract). The “Objects and Summary of the Invention” section of the ‘254 Patent states that it is an object of the invention to provide ambient light “over a wide area.” (Exhibit 1, Col. 1, Lines 42-45) and, further, teaches that the “second light fixture” of the preferred embodiment “direct[s] light toward a vertical wall abutting the head of the patient’s bed so as to provide a reflected light over a large area around the patient’s bed.” (Exhibit 1, Col. 2, Lines 7-10) (emphasis supplied). Consistent with these teachings, it is apparent that the reflected light from the “second light fixture” is reflected or redirected to a “broad” or “large area” under the light system. Such is further supported by Mr. Lemons wherein he explains that the “broad area” is “the area of the bed and around the bed.” (Exhibit 3 at p. 5).

H. *A Selected Patient Examination Area Is Properly Construed As “An Area Below The Light System In Which A Person May Be Examined”*

The claim term “a selected patient examination area” appears in claim 3 of the ‘254 Patent in the following context: “a third light fixture . . . oriented to direct light downwardly under said body to *a selected patient examination area*.” (Exhibit 1, Col. 4, Lines 1-3). The ordinary and customary meaning of the claim term “a selected patient examination area,” as supported by the intrinsic evidence and Lemons’ Statement, is “an area below the light system in which a person may be examined.”

The specification of the ‘254 Patent teaches in the “Objects and Summary of the Invention” section that the examination or third light fixture illuminates “the entire area of the patient’s bed.” (Exhibit 1, Col. 1, Lines 47-49; see also, Col. 2, Lines 15-16). The “Detailed

Description of the Preferred Embodiment” section of the ‘254 Patent again teaches that the examination fixture of the preferred embodiment illuminates “the entire area of the bed.” (Exhibit 1, Col. 3, Lines 6-7). Also, as previously discussed, the preferred embodiment is taught to be a light system ceiling-mounted over a patient bed. (Exhibit 1, Col. 1, Lines 62-68; Col. 2, Lines 30-33). Therefore, logic dictates that a patient will be on the bed under the light system and that different areas of the patient bed could be selected by hospital personnel to examine different bodily areas of the patient. Therefore, consistent with the claim terms themselves, the objects of the invention and the teachings of the preferred embodiment, the claim term “selected patient examination area” means “an area below the light system in which a person may be examined.”

Such a construction is further supported by Mr. Lemons. Consistent with the patent specification, Lemons states that the claim term means “an area of the patient’s bed used for examination.” (Exhibit 3 at p. 6).

I. Reflector Is Properly Construed As “A Device That Redirects Light”

The term “reflector” appears in claims 2 and 4 (Exhibit 1, Col. 3, Lines 49 and 51; Col. 4, Lines 5, 7 and 9) and is a common term used in the lighting industry with a meaning consistent with the ‘254 Patent. To one skilled in the art the term reflector means “a device that redirects light.” (Exhibit 3 at Exhibit B). This meaning is consistent with the ‘254 Patent specification which teaches that the preferred embodiment uses reflectors “to direct” the light in different directions. (Exhibit 1, Col. 2, Lines 3-10). As Mr. Lemons states, the term “reflector” is a widely understood in the industry to mean “a device used to redirect flux [light] from a source by the process of reflection.” (Exhibit 3 at p. 5).

J. Fluorescent Assembly Is Properly Construed As “A Unit of Lamps And Sockets”

The term “fluorescent assembly” appears in claims 4, 5 and 7 and, as supported by the intrinsic evidence and Lemons’ Statement, is properly construed to mean a “unit of lamps and sockets.” As Mr. Lemons explains, “the fluorescent assembly is the fluorescent lamps and sockets that with the reflector comprise the third light fixture.” (Exhibit 3 at p. 6).

K. Light Distribution Pattern Is Properly Construed As “The Pattern of Light Emitted From A Fluorescent Lamp”

The term “light distribution pattern” appears in claims 5 and 7 and, as supported by the intrinsic evidence and Lemons’ Statement, is properly construed to mean “the pattern of light emitted from a fluorescent lamp.” Such is consistent with the specification of the ‘254 Patent that teaches that the fluorescent bulbs of the examination fixture of the preferred embodiment have a “characteristic directional light distribution pattern oriented in the direction perpendicular to the bulbs.” (Exhibit 1, Col. 3, Lines 4-6). As Mr. Lemons explains, the “light distribution pattern” is a “three dimensional array [i.e., pattern] of flux [i.e., light] emitted by a lamp.” (Exhibit 3 at p. 6).

L. Glare Is Properly Construed As “The Sensation Produced By Light Entering A Person’s Visual Field Which Is Sufficiently Greater Than The Light To Which The Eyes Are Adapted To Cause Annoyance, Discomfort Or Loss in Visual Performance and Visibility”

The term “glare” appears in claims 13 and 14 (Exhibit 1, Col. 3, Lines 49 and 51; Col. 4, Lines 5, 7 and 9) and is a common term used in the lighting industry with a meaning consistent with the ‘254 Patent. To one skilled in the art the term “glare” means “the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort or loss in visual performance and visibility.” (Exhibit 3 at p. 7 and Exhibit B). This meaning is consistent with the ‘254 Patent specification

which teaches that the reflectors of the preferred embodiment are configured so glare is not directed to adjacent areas to allow other beds to be placed nearby “without undue disturbance on neighboring patients.” (Exhibit 1, Col. 2, Lines 61-65).

IV. CONCLUSION

Genlyte Thomas asserts that its claim construction of the terms of the ‘254 Patent at issue should be adopted because, in accord with Federal Circuit precedent, Genlyte Thomas has based its construction on the ordinary meaning of the words as understood by a person skilled in the lighting art. The table attached hereto as Exhibit 4 sets forth a summary of the proper construction of the disputed claim terms based on the case law cited herein and Lemons’ Statement.

Respectfully submitted,

Date: May 18, 2006

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/s/ John L. Capone
Counsel for Plaintiff, Genlyte Thomas Group LLC

EXHIBIT 1

United States Patent [19][11] **Patent Number:** **5,038,254****Fabbri et al.**[45] **Date of Patent:** **Aug. 6, 1991**[54] **INTEGRATED MEDICAL LIGHT SYSTEM**

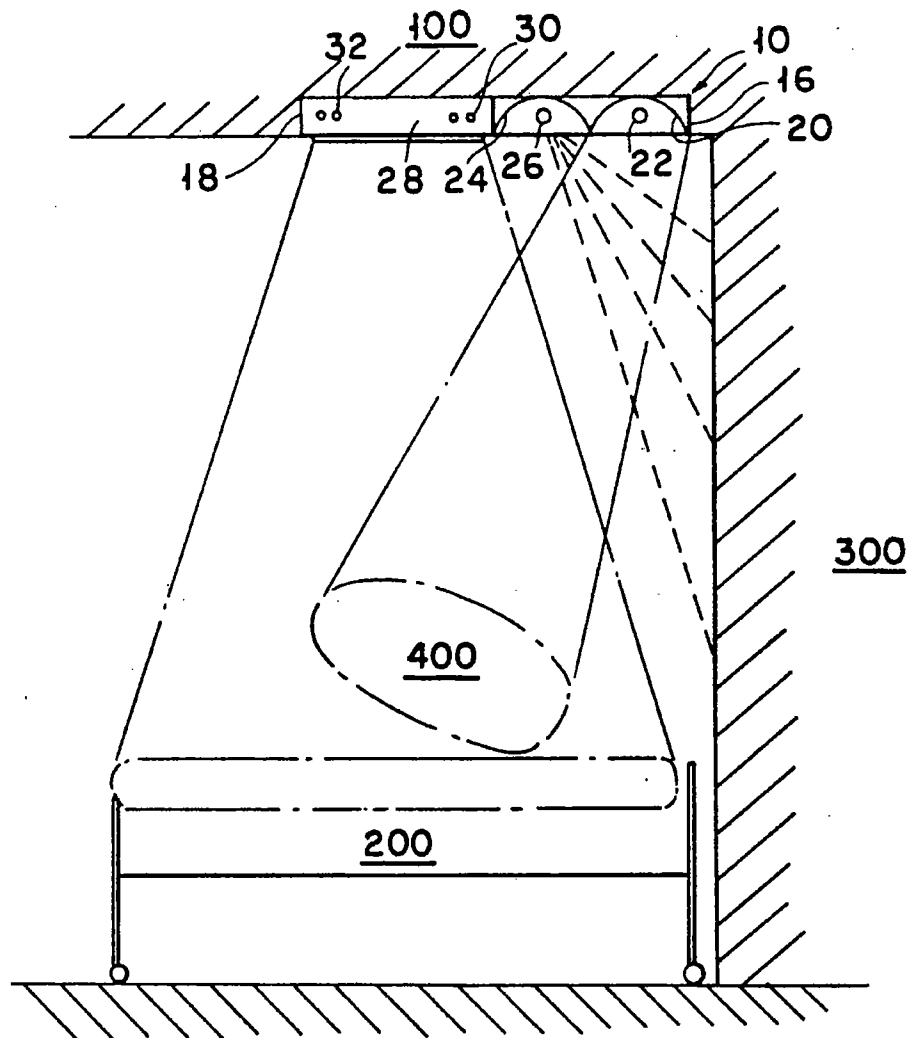
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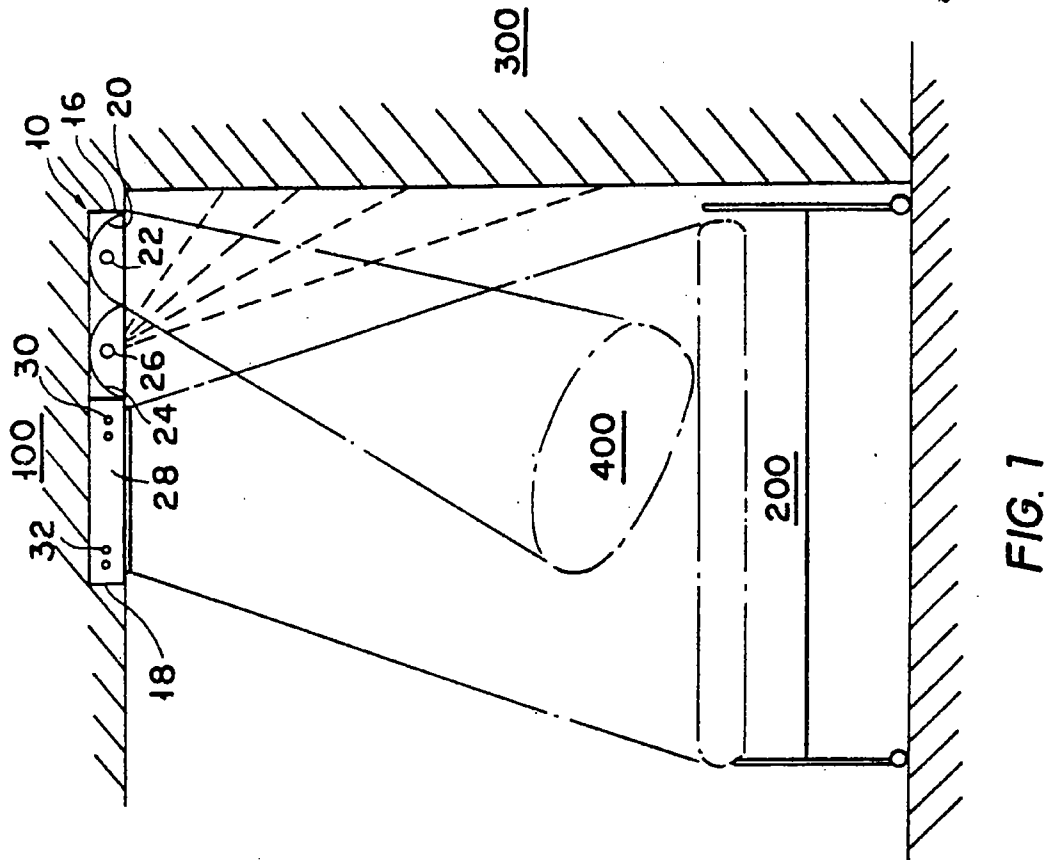
[75] **Inventors:** William C. Fabbri, Billerica; Roy Crane, Wilmington, both of Mass.*Primary Examiner*—Stephen F. Husar
Attorney, Agent, or Firm—Kane, Dalsimer, Sullivan, Kurucz, Levy, Eisele and Richard[73] **Assignee:** Keene Corporation, Union, N.J.[21] **Appl. No.:** 629,436[22] **Filed:** Dec. 18, 1990[51] **Int. Cl.⁵** F21V 13/00[52] **U.S. Cl.** 362/33; 362/225;
362/147; 362/804[58] **Field of Search** 362/33, 225, 240, 364,
362/147, 804[56] **References Cited****U.S. PATENT DOCUMENTS**

3,928,757 12/1975 Nelson 362/804 X

14 Claims, 2 Drawing Sheets[57] **ABSTRACT**

The apparatus is a medical lighting system which includes a ceiling-mount reading light, examination light and ambient light. The reading light is directed toward a selected reading area on a hospital bed directly below the medical lighting system. The examination light illuminates the entire top surface of the hospital bed. The ambient light directs light to a wall abutting the head of the hospital bed thereby providing reflected light to the vicinity of the hospital bed.





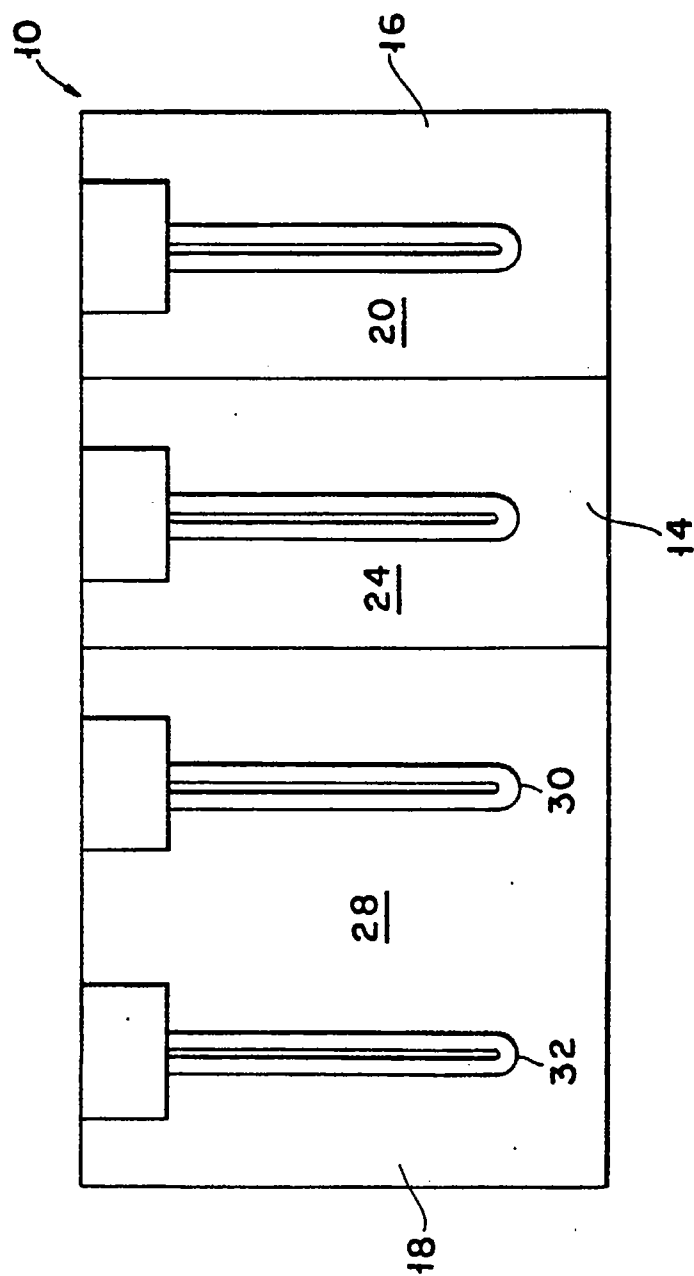


FIG. 2

5,038,254

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INTEGRATED MEDICAL LIGHT SYSTEM**BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention pertains to a light system for use in hospitals and health facilities. The light system includes an examination light, an ambient light, and a reading light and is preferably mounted in the ceiling.

2. Description of the Prior Art

In hospitals and similar health or medical facilities, it is desirable to provide the bedridden patient with three types of lights—the first is an ambient light which provides background, preferably reflected, light to a large area surrounding the bed; the second is a reading light which provides direct light to a portion of the patient's bed; and the third is an examination light which directs a high intensity light to substantially the entire area of the patient's bed. The ambient light typically has an illumination value of approximately 50 foot-candles while the reading light typically has an illumination value of approximately 70 foot-candles and the examination light typically has an illumination value of approximately 100 foot-candles.

In the prior art, these lights were typically provided individually in a haphazard way. Different types of lamps and light fixtures were placed around the bed with numerous plugs competing with medical equipment for available outlet space. Moreover, such an arrangement was unsightly and could impede the mobility of the patient, the patient's bed, or the surrounding medical equipment.

Wall-mounted fixtures alleviated some of the above-identified deficiencies but still left much to be desired aesthetically and, more importantly, could impede access to the patient, and were easily damaged by motor driven bed headboards.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide an integrated medical lighting system which provides an ambient light with an illumination value of about 50 foot-candles over a wide area; a reading light with an illumination value of about 70 foot-candles over an area appropriate for a patient reading in bed; and an examination light with an illumination value of about 100 foot-candles over the entire area of the patient's bed.

It is therefore a further object of this invention to provide an integrated medical lighting system which requires no more than one or two electrical connections.

It is therefore a still further object of this invention to provide an integrated medical lighting system which does not impede access to the patient, the patient's bed, or surrounding medical equipment.

It is therefore a final object of this invention to provide an integrated medical lighting system which is aesthetically pleasing.

These and other objects are effectively attained by providing a ceiling-mounted medical lighting system which includes three individual dedicated light fixtures. The lighting system is rectangular and is designed to be placed so that one of the shorter ends of the rectangle is placed substantially on the ceiling-wall interface directly over the head of the patient's bed. The bed is

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placed so that the longer sides of the bed are parallel to the longer sides of the rectangular light fixture.

A first light fixture includes a fluorescent bulb and a reflector designed to direct light toward the forward portion of the patient's bed so as to allow a patient to read comfortably. A second light fixture includes a fluorescent bulb and a reflector designed to direct light toward a vertical wall abutting the head of the patient's bed so as to provide a reflected light over a large area around the patient's bed. A third light fixture includes two to four fluorescent (preferably biax® or other U-shaped) bulbs which are oriented perpendicularly to the bed. The fluorescent bulbs have a light distribution pattern which is substantially oriented in the direction perpendicular to the bulb. Therefore, the entire area of the bed is efficiently illuminated providing an examination light.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIG. 1 is a side plan view of the integrated medical light system of the present invention.

FIG. 2 is a bottom plan view of the integrated medical light system of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like numerals indicate like elements throughout the several views, FIG. 1 is a side plan view of lighting fixture 10 shown installed in ceiling 100 directly over bed 200. FIG. 2 shows the rectangular shape of lighting fixture 10 formed by long sides 12, 14 and short sides 16, 18. Long sides 12, 14 are typically four feet in length while short sides 16, 18 are typically two feet in length. As shown in FIG. 1, short side 16 abuts the wall-ceiling (300, 100, respectively) interface directly over the head of bed 200. Long sides 12, 14 are parallel to the longer side of bed 200.

Reading light reflector 20 is along short side 16 of lighting fixture 10 proximate to wall 300 and includes a fluorescent bulb 22 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to provide a direct light to reading area 400 of bed 200 as shown on FIG. 1. Reflector 20 and bulb 22 are chosen to provide an illumination of approximately 70 foot-candles to reading area 400.

Ambient light reflector 24 is inwardly adjacent to reading light reflector 20 and includes a fluorescent bulb 26 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to reflect or bounce light from wall 300 thereby providing ambient light to bed 200. Reflector 24 and bulb 26 are chosen to provide approximately 50 foot-candles of illumination to the ambient area.

Reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare toward the head of bed 200 where the patient's head is likely to be, whether in a supine or sitting position. Similarly, reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare to areas adjacent to bed 200 so as to allow other beds (not shown) to be placed proximate thereto without undue disturbance of neighboring patients.

Examination light reflector 28 is outwardly adjacent to ambient light reflector 24, includes short side 18 and is opposite from reading light reflector 20. Examination

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light reflector 28 includes two to four fluorescent bulbs 30, 32. Fluorescent bulbs 30, 32 (preferably biacx® or other U-shaped) are parallel to short sides 16, 18 of lighting fixture 10. As fluorescent bulbs 30, 32 have a characteristic directional light distribution pattern oriented in the direction perpendicular to the bulbs, the entire area of the bed 200 is efficiently illuminated. The bulbs 30, 32 and reflector 28 are chosen to provide 100 foot-candles of illumination to the bed 200. An important feature of the present invention resides in the orientation of the lamps within the lighting 1 fixture which permits the lighting fixture 10 to be packaged in a two foot by four foot configuration and thereby replace a conventional troffer.

Bulbs 22, 26, 30 and 32 are powered by a single electrical source, preferably supplied from wiring within ceiling 100 although the use of a single electric cord (not shown) engaging an electrical socket (not shown) may be used. A single switch module (not shown), either hand-held or built into wall 300, is used to control bulbs 22 and 26 and a wall switch to control bulbs 30 and 32.

To use this device, the patient operates the switch module (not shown) to operate selectively bulbs 22 and 26. Medical personnel control bulbs 30 and 32 of the examination lighting from a switch on the headwall, not easily accessible to the patient.

Thus the several aforementioned objects and advantages are most effectively attained. Although a single preferred embodiment of the invention has been disclosed and described in detail herein, it should be understood that this invention is in no sense limited thereby and its scope is to be determined by that of the appended claims.

What is claimed is:

1. A medical lighting system comprising:

a body;

means for ceiling-mounting said body;

a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;

a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body.

2. The medical lighting system of claim 1 wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; and said second light fixture includes a second reflector and a second fluorescent bulb therewithin.

3. A medical lighting system comprising:

a body;

means for ceiling-mounting said body;

a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;

a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body;

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a third light fixture within said body oriented to direct light downwardly under said body to a selected patient examination area.

4. The medical lighting system of claim 3 wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; said second light fixture includes a second reflector and a second fluorescent bulb therewithin; and said third light fixture includes a third reflector and a fluorescent assembly therewithin.

5. The medical lighting system of claim 4 wherein said fluorescent assembly includes at least one fluorescent bulb with a light distribution pattern oriented in a direction perpendicular to said at least one fluorescent bulb.

6. The medical lighting system of claim 5 wherein said at least one fluorescent bulb is a "biacx"-type bulb.

7. The medical lighting system of claim 5 wherein said fluorescent assembly includes at least two fluorescent bulbs with a light distribution pattern oriented in a direction perpendicular to said at least two fluorescent bulbs.

8. The medical lighting system of claim 7 wherein said at least two fluorescent bulbs are "biacx"-type bulbs.

9. The medical lighting system of claim 5 wherein said body is rectangular and a first shorter end of said body is designed to abut the vertical wall surface; wherein said first fluorescent light fixture abuts said first shorter end and said first fluorescent light bulb is parallel to said first shorter end; wherein said second fluorescent light fixture is inwardly adjacent to said first fluorescent light fixture and said second fluorescent light fixture is parallel to first shorter end; and wherein said third fluorescent light fixture is outwardly adjacent from said second fluorescent light fixture and abuts a second shorter end of said body; and wherein said at least one fluorescent bulb is parallel to said first shorter end.

10. The medical lighting system of claim 9 wherein said first and second shorter ends are substantially two feet in length and said body includes first and second longer ends which are substantially four feet in length.

11. The medical lighting system of claim 9 wherein said first light fixture illuminates said selected reading area to substantially 70 foot-candles; wherein said second light fixture illuminates said broad area to substantially 50 foot-candles; and wherein said third light fixture illuminates said patient examination area to substantially 100 foot-candles.

12. The medical lighting system of claim 11 wherein said patient examination area is sufficient in size to include a standard hospital bed when said first light fixture is substantially directly over a head of the standard hospital bed, the head of the standard hospital bed substantially abutting the vertical wall surface.

13. The medical lighting system of claim 3 wherein a distribution of light from said first and second light fixtures excludes glare from being directed to a forward area of a standard hospital bed placed below the medical lighting system.

14. The medical lighting system of claim 3 wherein a distribution of light from said first and second light fixtures excludes glare from areas adjacent to a standard hospital bed placed below the medical lighting system.

* * * * *

EXHIBIT 2

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SERIAL NUMBER (Series of 1987) 07 629436	PATENT DATE AUG 06 1991	PATENT NUMBER
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SERIAL NUMBER 07/629,436	FILING DATE 12/18/90	CLASS 362	SUBCLASS 147 33	GROUP/ART UNIT 346	EXAMINER Husar
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APPLICANTS WILLIAM C. FABBRI, BILLERICA, MA; ROY CRANE, WILMINGTON, MA.

CONTINUING DATA*** None
VERIFIED

SPH

FOREIGN/PCT APPLICATIONS*** None
VERIFIED

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Foreign priority claimed 35 USC 119 conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	AS FILED →	STATE OR COUNTRY MA	SHEETS DRWGS 2	TOTAL CLAIMS 14	INDEP CLAIMS 2	FILING FEE RECEIVED \$ 630.00	ATTORNEY'S DOCKET NO. 1801-M-47
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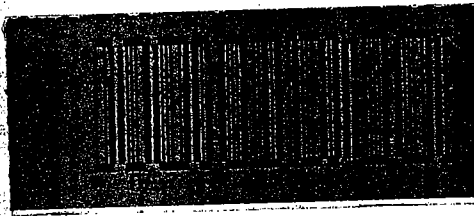
TITLE INTEGRATED MEDICAL LIGHT SYSTEM

U.S. DEPT. of COMM. Pat. & TM Office—PTO-436L (rev. 10-78)

PARTS OF APPLICATION
FILED SEPARATELY

NOTICE OF ALLOWANCE MAILED MAR 20 1991		PREPARED FOR ISSUE 3-26-91		CLAIMS ALLOWED	
		Assistant Examiner	D. Redman Docket Clerk	Total Claims 14	Print Claim 1
ISSUE FEE		SPH STEPHEN F. HUSAR PRIMARY EXAMINER ART UNIT 346 Primary Examiner		DRAWING	
Amount Due \$1050.00	Date Paid 5/31/91			Sheets Drwg. 2	Figs. Drwg. 2
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		Class 362	Subclass 33	N96	
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INDEX OF CLAIMS

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SYMBOLS
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= Allowed
- (Through numeral) Canceled
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INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.
362	33, 147, 225, 804,	3/91	SFH

SEARCH NOTES		
	Date	Exmr.
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United States Patent [19]

Fabbri et al.

[11] Patent Number: **5,038,254**
 [45] Date of Patent: **Aug. 6, 1991**

[54] INTEGRATED MEDICAL LIGHT SYSTEM

[75] Inventors: William C. Fabbri, Billerica; Roy Crane, Wilmington, both of Mass.

[73] Assignee: Keene Corporation, Union, N.J.

[21] Appl. No.: 629,436

[22] Filed: Dec. 18, 1990

[51] Int. Cl.⁵ F21V 13/00

[52] U.S. Cl. 362/33; 362/225;
 362/147; 362/804

[58] Field of Search 362/33, 225, 240, 364,
 362/147, 804

[56] References Cited

U.S. PATENT DOCUMENTS

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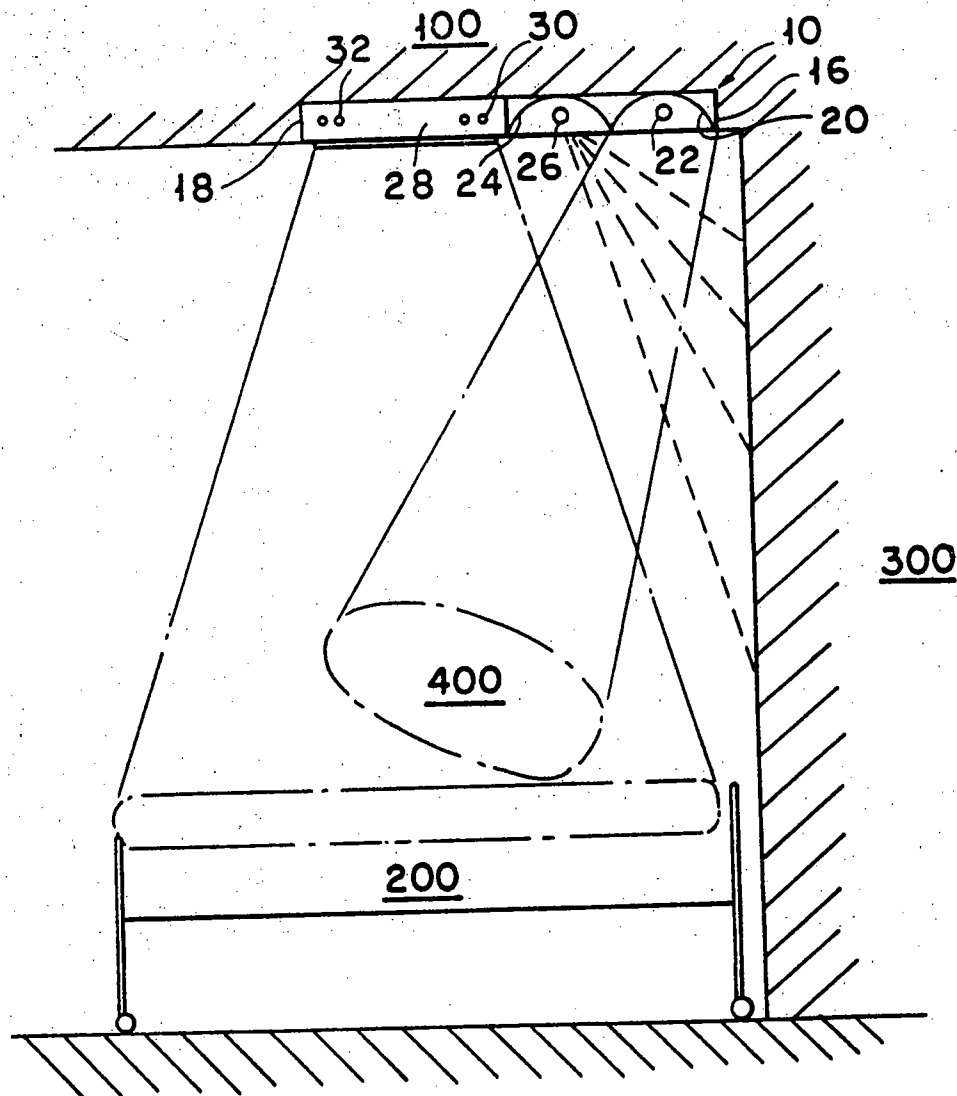
4,204,274 5/1980 Lüderitz 362/225 X

Primary Examiner—Stephen F. Husar
 Attorney, Agent, or Firm—Kane, Dalsimer, Sullivan,
 Kurucz, Levy, Eisele and Richard

[57] ABSTRACT

The apparatus is a medical lighting system which includes a ceiling-mount reading light, examination light and ambient light. The reading light is directed toward a selected reading area on a hospital bed directly below the medical lighting system. The examination light illuminates the entire top surface of the hospital bed. The ambient light directs light to a wall abutting the head of the hospital bed thereby providing reflected light to the vicinity of the hospital bed.

14 Claims, 2 Drawing Sheets



U.S. Patent

Aug. 6, 1991

Sheet 2 of 2

5,038,254

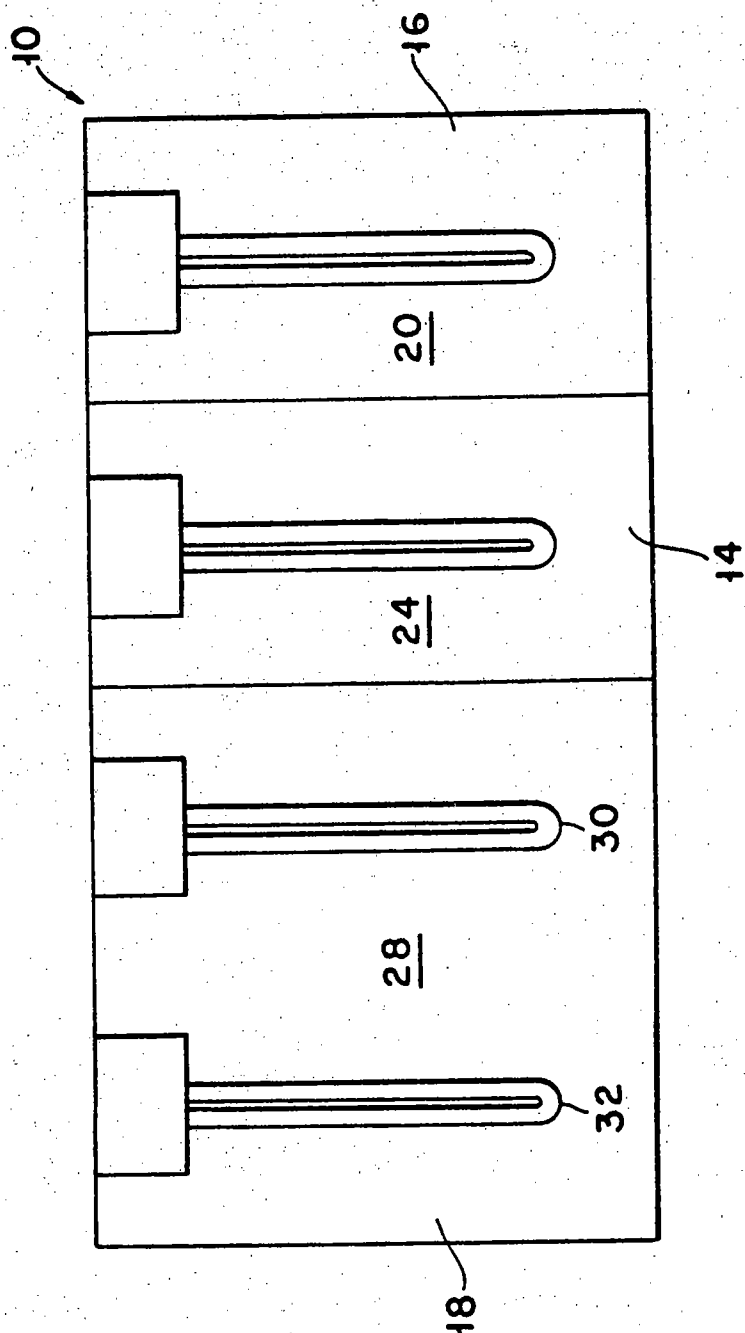


FIG. 2

5,038,254

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INTEGRATED MEDICAL LIGHT SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to a light system for use in hospitals and health facilities. The light system includes an examination light, an ambient light, and a reading light and is preferably mounted in the ceiling.

2. Description of the Prior Art

In hospitals and similar health or medical facilities, it is desirable to provide the bedridden patient with three types of lights—the first is an ambient light which provides background, preferably reflected, light to a large area surrounding the bed; the second is a reading light which provides direct light to a portion of the patient's bed; and the third is an examination light which directs a high intensity light to substantially the entire area of the patient's bed. The ambient light typically has an illumination value of approximately 50 foot-candles while the reading light typically has an illumination value of approximately 70 foot-candles and the examination light typically has an illumination value of approximately 100 foot-candles.

In the prior art, these lights were typically provided individually in a haphazard way. Different types of lamps and light fixtures were placed around the bed with numerous plugs competing with medical equipment for available outlet space. Moreover, such an arrangement was unsightly and could impede the mobility of the patient, the patient's bed, or the surrounding medical equipment.

Wall-mounted fixtures alleviated some of the above-identified deficiencies but still left much to be desired aesthetically and, more importantly, could impede access to the patient, and were easily damaged by motor driven bed headboards.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide an integrated medical lighting system which provides an ambient light with an illumination value of about 50 foot-candles over a wide area; a reading light with an illumination value of about 70 foot-candles over an area appropriate for a patient reading in bed; and an examination light with an illumination value of about 100 foot-candles over the entire area of the patient's bed.

It is therefore a further object of this invention to provide an integrated medical lighting system which requires no more than one or two electrical connections.

It is therefore a still further object of this invention to provide an integrated medical lighting system which does not impede access to the patient, the patient's bed, or surrounding medical equipment.

It is therefore a final object of this invention to provide an integrated medical lighting system which is aesthetically pleasing.

These and other objects are effectively attained by providing a ceiling-mounted medical lighting system which includes three individual dedicated light fixtures. The lighting system is rectangular and is designed to be placed so that one of the shorter ends of the rectangle is placed substantially on the ceiling-wall interface directly over the head of the patient's bed. The bed is

2

placed so that the longer sides of the bed are parallel to the longer sides of the rectangular light fixture.

A first light fixture includes a fluorescent bulb and a reflector designed to direct light toward the forward portion of the patient's bed so as to allow a patient to read comfortably. A second light fixture includes a fluorescent bulb and a reflector designed to direct light toward a vertical wall abutting the head of the patient's bed so as to provide a reflected light over a large area around the patient's bed. A third light fixture includes two to four fluorescent (preferably biax® or other U-shaped) bulbs which are oriented perpendicularly to the bed. The fluorescent bulbs have a light distribution pattern which is substantially oriented in the direction perpendicular to the bulb. Therefore, the entire area of the bed is efficiently illuminated providing an examination light.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIG. 1 is a side plan view of the integrated medical light system of the present invention.

FIG. 2 is a bottom plan view of the integrated medical light system of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like numerals indicate like elements throughout the several views, FIG. 1 is a side plan view of lighting fixture 10 shown installed in ceiling 100 directly over bed 200. FIG. 2 shows the rectangular shape of lighting fixture 10 formed by long sides 12, 14 and short sides 16, 18. Long sides 12, 14 are typically four feet in length while short sides 16, 18 are typically two feet in length. As shown in FIG. 1, short side 16 abuts the wall-ceiling (300, 100, respectively) interface directly over the head of bed 200. Long sides 12, 14 are parallel to the longer side of bed 200.

Reading light reflector 20 is along short side 16 of lighting fixture 10 proximate to wall 300 and includes a fluorescent bulb 22 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to provide a direct light to reading area 400 of bed 200 as shown on FIG. 1. Reflector 20 and bulb 22 are chosen to provide an illumination of approximately 70 foot-candles to reading area 400.

Ambient light reflector 24 is inwardly adjacent to reading light reflector 20 and includes a fluorescent bulb 26 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to reflect or bounce light from wall 300 thereby providing ambient light to bed 200. Reflector 24 and bulb 26 are chosen to provide approximately 50 foot-candles of illumination to the ambient area.

Reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare toward the head of bed 200 where the patient's head is likely to be, whether in a supine or sitting position. Similarly, reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare to areas adjacent to bed 200 so as to allow other beds (not shown) to be placed proximate thereto without undue disturbance of neighboring patients.

Examination light reflector 28 is outwardly adjacent to ambient light reflector 24, includes short side 18 and is opposite from reading light reflector 20. Examination

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light reflector 28 includes two to four fluorescent bulbs 30, 32. Fluorescent bulbs 30, 32 (preferably biac[®] or other U-shaped) are parallel to short sides 16, 18 of lighting fixture 10. As fluorescent bulbs 30, 32 have a characteristic directional light distribution pattern oriented in the direction perpendicular to the bulbs, the entire area of the bed 200 is efficiently illuminated. The bulbs 30, 32 and reflector 28 are chosen to provide 100 foot-candles of illumination to the bed 200. An important feature of the present invention resides in the orientation of the lamps within the lighting 1 fixture which permits the lighting fixture 10 to be packaged in a two foot by four foot configuration and thereby replace a conventional troffer.

Bulbs 22, 26, 30 and 32 are powered by a single electrical source, preferably supplied from wiring within ceiling 100 although the use of a single electric cord (not shown) engaging an electrical socket (not shown) may be used. A single switch module (not shown), either hand-held or built into wall 300, is used to control bulbs 22 and 26 and a wall switch to control bulbs 30 and 32.

To use this device, the patient operates the switch module (not shown) to operate selectively bulbs 22 and 26. Medical personnel control bulbs 30 and 32 of the examination lighting from a switch on the headwall, not easily accessible to the patient.

Thus the several aforementioned objects and advantages are most effectively attained. Although a single preferred embodiment of the invention has been disclosed and described in detail herein, it should be understood that this invention is in no sense limited thereby and its scope is to be determined by that of the appended claims.

What is claimed is:

1. A medical lighting system comprising:

a body;

means for ceiling-mounting said body;

a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;

a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body.

2. The medical lighting system of claim 1 wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; and said second light fixture includes a second reflector and a second fluorescent bulb therewithin.

3. A medical lighting system comprising:

a body;

means for ceiling-mounting said body;

a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;

a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body;

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a third light fixture within said body oriented to direct light downwardly under said body to a selected patient examination area.

4. The medical lighting system of claim 3 wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; said second light fixture includes a second reflector and a second fluorescent bulb therewithin; and said third light fixture includes a third reflector and a fluorescent assembly therewithin.

5. The medical lighting system of claim 4 wherein said fluorescent assembly includes at least one fluorescent bulb with a light distribution pattern oriented in a direction perpendicular to said at least one fluorescent bulb.

6. The medical lighting system of claim 5 wherein said at least one fluorescent bulb is a "biac"-type bulb.

7. The medical lighting system of claim 5 wherein said fluorescent assembly includes at least two fluorescent bulbs with a light distribution pattern oriented in a direction perpendicular to said at least two fluorescent bulbs.

8. The medical lighting system of claim 7 wherein said at least two fluorescent bulbs are "biac"-type bulbs.

9. The medical lighting system of claim 5 wherein said body is rectangular and a first shorter end of said body is designed to abut the vertical wall surface; wherein said first fluorescent light fixture abuts said first shorter end and said first fluorescent light bulb is parallel to said first shorter end; wherein said second fluorescent light fixture is inwardly adjacent to said first fluorescent light fixture and said second fluorescent light fixture is parallel to first shorter end; and wherein said third fluorescent light fixture is outwardly adjacent from said second fluorescent light fixture and abuts a second shorter end of said body; and wherein said at least one fluorescent bulb is parallel to said first shorter end.

10. The medical lighting system of claim 9 wherein said first and second shorter ends are substantially two feet in length and said body includes first and second longer ends which are substantially four feet in length.

11. The medical lighting system of claim 9 wherein said first light fixture illuminates said selected reading area to substantially 70 foot-candles; wherein said second light fixture illuminates said broad area to substantially 50 foot-candles; and wherein said third light fixture illuminates said patient examination area to substantially 100 foot-candles.

12. The medical lighting system of claim 11 wherein said patient examination area is sufficient in size to include a standard hospital bed when said first light fixture is substantially directly over a head of the standard hospital bed, the head of the standard hospital bed substantially abutting the vertical wall surface.

13. The medical lighting system of claim 3 wherein a distribution of light from said first and second light fixtures excludes glare from being directed to a forward area of a standard hospital bed placed below the medical lighting system.

14. The medical lighting system of claim 3 wherein a distribution of light from said first and second light fixtures excludes glare from areas adjacent to a standard hospital bed placed below the medical lighting system.

* * * * *

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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

040 RP 01/09/91 07629436

1 101

630.00 CK 1801-M-47

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ABSTRACT OF THE DISCLOSURE

The apparatus is a medical lighting system which includes a ceiling-mounted reading light, examination light and ambient light. The reading light is directed toward a selected reading area on a hospital bed directly below the medical lighting system. The examination light illuminates the entire top surface of the hospital bed. The ambient light directs light to a wall abutting the head of the hospital bed thereby providing reflected light to the vicinity of the hospital bed.



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INTEGRATED MEDICAL LIGHT SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

This invention pertains to a light system for use in hospitals and health facilities. The light system includes an examination light, an ambient light, and a reading light and is preferably mounted in the ceiling.

Description of the Prior Art

In hospitals and similar health or medical facilities, it is desirable to provide the bedridden patient with three types of lights -- the first is an ambient light which provides background, preferably reflected, light to a large area surrounding the bed; the second is a reading light which provides direct light to a portion of the patient's bed; and the third is an examination light which directs a high intensity light to substantially the entire area of the patient's bed. The ambient light typically has an illumination value of approximately 50 foot-candles while the reading light typically has an illumination value of approximately 70 foot-candles and the examination light typically has an illumination value of approximately 100 foot-candles.

In the prior art, these lights were typically provided individually in a haphazard way. Different types of lamps and light fixtures were placed around the bed with numerous plugs competing with medical equipment for available outlet space. Moreover, such an arrangement was unsightly and could impede the mobility of the patient, the patient's bed, or the surrounding medical equipment.

Wall-mounted fixtures alleviated some of the above-identified deficiencies but still left much to be desired

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aesthetically and, more importantly, could impede access to the patient, and were easily damaged by motor driven bed headboards.

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OBJECTS AND SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide an integrated medical lighting system which provides an ambient light with an illumination value of about 50 foot-candles over a wide area; a reading light with an illumination value of about 70 foot-candles over an area appropriate for a patient reading in bed; and an examination light with an illumination value of about 100 foot-candles over the entire area of the patient's bed.

It is therefore a further object of this invention to provide an integrated medical lighting system which requires no more than one or two electrical connections.

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It is therefore a still further object of this invention to provide an integrated medical lighting system which does not impede access to the patient, the patient's bed, or surrounding medical equipment.

It is therefore a final object of this invention to provide an integrated medical lighting system which is aesthetically pleasing.

These and other objects are effectively attained by providing a ceiling-mounted medical lighting system which includes three individual dedicated light fixtures. The lighting system is rectangular and is designed to be placed so that one of the shorter ends of the rectangle is placed substantially on the ceiling-wall interface directly over the head of the patient's bed. The bed is placed so that the longer sides of the bed are parallel to the longer sides of the rectangular light fixture.

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A first light fixture includes a fluorescent bulb and a reflector designed to direct light toward the forward portion of the patient's bed so as to allow a patient to read comfortably. A second light fixture includes a fluorescent bulb and a reflector designed to direct light toward a vertical wall abutting the head of the patient's bed so as to provide a reflected light over a large area around the patient's bed. A third light fixture includes two to four fluorescent (preferably biax® or other U-shaped) bulbs which are oriented perpendicularly to the bed. The fluorescent bulbs have a light distribution pattern which is substantially oriented in the direction perpendicular to the bulb. Therefore, the entire area of the bed is efficiently illuminated providing an examination light.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a side plan view of the integrated medical light system of the present invention.

Figure 2 is a bottom plan view of the integrated medical light system of the present invention.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like numerals indicate like elements throughout the several views, Figure 1 is a side plan view of lighting fixture 10 shown installed in ceiling 100 directly over bed 200. Figure 2 shows the rectangular shape of lighting fixture 10 formed by long sides 12, 14 and short sides 16, 18. Long sides 12, 14 are typically four feet in length while short sides 16, 18 are typically two feet in length. As shown in Figure 1, short side 16 abuts the wall-ceiling (300, 100, respectively) interface directly over the head of bed 200. Long sides 12, 14 are parallel to the longer side of bed 200.

Reading light reflector 20 is along short side 16 of lighting fixture 10 proximate to wall 300 and includes a fluorescent bulb 22 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to provide a direct light to reading area 400 of bed 200 as shown on Figure 1. Reflector 20 and bulb 22 are chosen to provide an illumination of approximately 70 foot-candles to reading area 400.

Ambient light reflector 24 is inwardly adjacent to reading light reflector 20 and includes a fluorescent bulb 26 positioned therewithin parallel to short sides 16, 18 of lighting fixture 10 so as to reflect or bounce light from wall 300 thereby providing ambient light to bed 200. Reflector 24 and bulb 26 are chosen to provide approximately 50 foot-candles of illumination to the ambient area.

Reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare toward the head of bed 200 where the patient's head is likely to be, whether in a supine or sitting position. Similarly, reflectors 20, 24 and bulbs 22, 26 are configured so as not to direct glare to areas adjacent to bed 200 so as to

allow other beds (not shown) to be placed proximate thereto without undue disturbance of neighboring patients.

Examination light reflector 28 is outwardly adjacent to ambient light reflector 24, includes short side 18 and is opposite from reading light reflector 20. Examination light reflector 28 includes two to four fluorescent bulbs 30, 32. Fluorescent bulbs 30, 32 (preferably biax® or other U-shaped) are parallel to short sides 16, 18 of lighting fixture 10. As fluorescent bulbs 30, 32 have a characteristic directional light distribution pattern oriented in the direction perpendicular to the bulbs, the entire area of the bed 200 is efficiently illuminated. The bulbs 30, 32 and reflector 28 are chosen to provide 100 foot-candles of illumination to the bed 200. An important feature of the present invention resides in the orientation of the lamps within the lighting 10 fixture which permits the lighting fixture 10 to be packaged in a two foot by four foot configuration and thereby replace a conventional troffer.

Bulbs 22, 26, 30 and 32 are powered by a single electrical source, preferably supplied from wiring within ceiling 100 although the use of a single electric cord (not shown) engaging an electrical socket (not shown) may be used. A single switch module (not shown), either hand-held or built into wall 300, is used to control bulbs 22 and 26 and a wall switch to control bulbs 30 and 32.

To use this device, the patient operates the switch module (not shown) to operate selectively bulbs 22 and 26. Medical personnel control bulbs 30 and 32 of the examination lighting from a switch on the headwall, not easily accessible to the patient.

Thus the several aforementioned objects and advantages are

most effectively attained. Although a single preferred embodiment of the invention has been disclosed and described in detail herein, it should be understood that this invention is in no sense limited thereby and its scope is to be determined by that of the appended claims.

7 cm what is claimed is:

CLAIMS

What is Claimed is: 1

- ³
1. A medical lighting system comprising:
- a body;
 - means for ceiling-mounting said body;
 - a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;
 - a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body;
 - a third light fixture within said body oriented to direct light downwardly under said body to a selected patient examination area.

- ⁴
2. The medical lighting system of Claim ³~~1~~ wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; said second light fixture includes a second reflector and a second fluorescent bulb therewithin; and said third light fixture includes a third reflector and a fluorescent assembly therewithin.

- ⁵
3. The medical lighting system of Claim ⁴~~2~~ wherein said fluorescent assembly includes at least one fluorescent bulb with a light distribution pattern oriented in a direction perpendicular to said at least one fluorescent bulb.

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4. The medical lighting system of Claim ⁵~~3~~ wherein said at least one fluorescent bulb is a "biax"-type bulb.

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5. The medical lighting system of Claim ~~3~~ wherein said fluorescent assembly includes at least two fluorescent bulbs with a light distribution pattern oriented in a direction perpendicular to said at least two fluorescent bulbs.

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6. The medical lighting system of Claim ~~5~~ wherein said at least two fluorescent bulbs are "biax"-type bulbs.

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7. The medical lighting system of Claim ~~3~~ wherein said body is rectangular and a first shorter end of said body is designed to abut the vertical wall surface; wherein said first fluorescent light fixture abuts said first shorter end and said first fluorescent light bulb is parallel to said first shorter end; wherein said second fluorescent light fixture is inwardly adjacent to said first fluorescent light fixture and said second fluorescent light fixture is parallel to first shorter end; and wherein said third fluorescent light fixture is outwardly adjacent from said second fluorescent light fixture and abuts a second shorter end of said body; and wherein said at least one fluorescent bulb is parallel to said first shorter end.

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8. The medical lighting system of Claim ~~7~~ wherein said first and second shorter ends are substantially two feet in length and said body includes first and second longer ends which are substantially four feet in length.

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9. The medical lighting system of Claim 7 wherein said first light fixture illuminates said selected reading area to substantially 70 foot-candles; wherein said second light fixture illuminates said broad area to substantially 50 foot-candles; and wherein said third light fixture illuminates said patient examination area to substantially 100 foot-candles.

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10. The medical lighting system of Claim 9 wherein said patient examination area is sufficient in size to include a standard hospital bed when said first light fixture is substantially directly over a head of the standard hospital bed, the head of the standard hospital bed substantially abutting the vertical wall surface.

13
11. The medical lighting system of Claim 1 wherein a distribution of light from said first and second light fixtures excludes glare from being directed to a forward area of a standard hospital bed placed below the medical lighting system.

14
12. The medical lighting system of Claim 3 wherein a distribution of light from said first and second light fixtures excludes glare from areas adjacent to a standard hospital bed placed below the medical lighting system.

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13. A medical lighting system comprising: ✓

a body;

means for ceiling-mounting said body;

a first light fixture within said body oriented to direct light downwardly to a selected reading area under said body;

P'
a second light fixture within said body oriented to direct light downwardly and outwardly to a vertical wall surface outwardly adjacent from said body whereby light is reflected back to a broad area under said body.

✓
14. The medical lighting system of Claim 13 wherein said first light fixture includes a first reflector and a first fluorescent bulb therewithin; and said second light fixture includes a second reflector and a second fluorescent bulb therewithin. ✓

My residence, post office address and citizenship are as stated below next to my name, (indicated below) or an original

My residence, post office address and citizenship are as stated below next to my name,
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled
INTEGRATED MEDICAL LIGHT SYSTEM

(check one) ☒ is attached hereto.

☐ was filed on _____ as _____

Application Serial No.

and was amended on _____ (if applicable)

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. Joseph C. Sullivan, Registration No. 18,720; John Kurucz, Registration No. 18,688; Gerald Levy, Registration No. 24,419; Joseph T. Eisele, Registration No. 25,331; Ronald R. Santucci, Registration No. 28,988; William H. Dippert, Registration No. 26,723; Tiberiu Weisz, Registration No. 29,876; Ronald E. Brown, Registration No. 32,200; John Gulbin, Registration No. 35,180; [REDACTED], Registration No. 30,383.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. Joseph C. Sullivan, Registration No. 18,720; John Kurucz, Registration No. 18,688; Gerald Levy, Registration No. 24,419; Joseph T. Eisele, Registration No. 25,331; Ronald R. Santucci, Registration No. 28,988; William H. Dippert, Registration No. 26,723; Tiberiu Weisz, Registration No. 29,876; Ronald E. Brown, Registration No. 32,200; John Gulbin, Registration No. 35,180; [REDACTED], Registration No. 30,383.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201

SIGNATURE OF INVENTOR 202

SIGNATURE OF INVENTOR 203

DATE _____

DATE _____

DATE _____



07 629436

1801-M-47 **PATENT**

Docket No. _____

Commissioner of Patents and Trademarks
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of
Inventor(s): William C. Fabbri and Roy Crane

WARNING: Patent must be applied for in the name(s) of all of the actual inventor(s). 37 CFR 1.41(a) and 1.53(b).

For (title): INTEGRATED MEDICAL LIGHT SYSTEM

1. Type of Application

This new application is for a(n) (check one applicable item below):

- ☒ Original
☐ Design
☐ Plant

WARNING: Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. 371(c)(4) unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

NOTE: If one of the following 3 items apply then complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED.**

- ☐ Divisional
☐ Continuation
☐ Continuation-in-part (CIP)

CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this New Application Transmittal and the documents referred to as enclosed therein are being deposited with the United States Postal Service on this date December 18, 1990 in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number NB197 300 521 addressed to the: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Barbara Vodola

(Type or print name of person mailing paper)

Barbara Vodola

(Signature of person mailing paper)

NOTE: Each paper or fee referred to as enclosed herein has the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 CFR 1.10(b).

(Application Transmittal [4-1]—page 1 of 7)

2. Benefit of Prior U.S. Application(s) (35 USC 120)

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., then check the following item and complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

- ☐ The new application being transmitted claims the benefit of prior U.S. application(s) and enclosed are **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

3. Papers Enclosed Which Are Required For Filing Date Under 37 CFR 1.53(b) (Regular) or 37 CFR 1.153 (Design) Application

6 Pages of specification
4 Pages of claims
1 Pages of Abstract
2 Sheets of drawing

- ☐ formal
☒ informal

WARNING: DO NOT submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. Comments on proposed new 37 CFR 1.84. Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia such as the serial number, group and unit, title of the invention, attorney's docket number, inventor's name, number of sheets, etc., not to exceed 2 1/4 inches (7.0 cm.) in width may be placed in a centered location between the side edges within three fourths inch (19.1 mm.) of the top edge. Either this marking technique on the front of the drawing or the placement, although not preferred, of this information and the title of the invention on the back of the drawings is acceptable." Proposed 37 CFR 1.84(1). Notice of March 9, 1988 (1990 O.G. 57-62).

4. Additional papers enclosed

- ☐ Preliminary Amendment
☐ Information Disclosure Statement
☐ Form PTO-1449
☐ Citations
☐ Declaration of Biological Deposit
☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative
☐ Special Comments
☐ Other

5. Declaration or oath☒ **Enclosed**

executed by (check all applicable boxes)

☒ inventor(s).☐ legal representative of inventor(s). 37 CFR 1.42 or 1.43☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.☐ this is the petition required by 37 CFR 1.47 and the statement required by 37 CFR 1.47 is also attached. See item 13 below for fee.☐ **Not Enclosed.**

WARNING: Where the filing is a completion in the U.S. of an International Application but where a declaration is not available or where the completion of the U.S. application contains subject matter in addition to the International Application the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

☐ Application is made by a person authorized under 37 CFR 1.41(c) on behalf of all the above named inventor(s). The declaration or oath, along with the surcharge required by 37 CFR 1.16(e) can be filed subsequently.

Note: It is important that all the correct inventor(s) are named for filing under 37 CFR 1.41(c) and 1.53(b).

☐ Showing that the filing is authorized. (Not required unless called into question. 37 CFR 1.41(d).)**6. Inventorship Statement**

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

☒ The same

or

☐ Are not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,☐ is submitted.☐ will be submitted.**7. Language**

NOTE: An application including a signed oath or declaration may be filed in a language other than English. A verified English translation of the non-English language application and the processing fee of \$30.00 required by 37 CFR 1.17(k) is required to be filed with the application or within such time as may be set by the Office. 37 CFR 1.52(d).

NOTE: A non-English oath or declaration in the form provided or approved by the PTO need not be translated. 37 CFR 1.69(b).

☒ English☐ non-English☐ the attached translation is a verified translation. 37 CFR 1.52(d).

8. Assignment

☒ An assignment of the invention to KEENE CORPORATION

☒ is attached.

☐ will follow.

9. Certified Copy

Certified copy(ies) of application(s)

(country)	(appn. no.)	(filed)
(country)	(appn. no.)	(filed)
(country)	(appn. no.)	(filed)

from which priority is claimed

☐ is(are) attached.

☐ will follow.

Note: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 CFR 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. 120 is itself entitled to priority from a prior foreign application then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 CFR 1.16)

A. ☒ Regular application

CLAIMS AS FILED			
Number filed	Number Extra	Rate	Basic Fee \$630.00
Total 14	0		
Claims -20=	X	\$ 20.00	
Independent 2	0		
Claims (37 CFR 1.16(b)) -3=	X	\$ 60.00	
Multiple dependent claim(s), if any (37 CFR 1.16(d))		\$ 200.00	

☐ Amendment cancelling extra claims enclosed.

☐ Amendment deleting multiple dependencies enclosed.

☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 CFR 1.16(d).

Filing Fee Calculation \$ 630.00

(Application Transmittal [4-1]—page 4 of 7)

- B. ☐ **Design application**
(\$150.00—37 CFR 1.16(f))

Filing Fee Calculation \$ _____

- C. ☐ **Plant application**
(\$250.00—37 CFR 1.16(g))

Filing fee calculation \$ _____

11. Small Entity Statement(s)

- ☐ Verified Statement(s) that this is a filing by a small entity under 37 CFR 1.9 and 1.27 is(are) attached.

Filing Fee Calculation (50% of A, B or C above) \$ _____

NOTE: Any excess of the full fee paid will be refunded if a verified statement and a refund request are filed within 2 months of the date of timely payment of a full fee. 37 CFR 1.28(a).

12. Request for International-Type Search (37 CFR 1.104(d)) (complete, if applicable)

- ☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made At This Time

- ☐ Not Enclosed

- ☐ No filing fee is to be paid at this time. (This and the surcharge required by 37 CFR 1.16(e) can be paid subsequently.)

- ☒ Enclosed

- ☒ basic filing fee \$ 630.00

- ☒ recording assignment
(\$8.00; 37 CFR 1.21(h)) \$ 8.00

- ☐ petition fee for filing by other
than all the inventors or person
on behalf of the inventor where
inventor refused to sign or cannot
be reached. (\$120.00; 37 CFR
1.47 and 1.17(h)) \$ _____

- ☐ for processing an application with
a specification in a non-English
language. (\$30.00; 37 CFR 1.52(d) and
1.17(k)) \$ _____

- ☐ processing and retention fee
(\$120.00; 37 CFR 1.53(d) and 1.21(l))

- ☐ fee for international-type search report (\$30.00;
37 CFR 1.21(e)). \$ _____

NOTE: 37 CFR 1.21(f) establishes a fee for processing and retaining any application which is abandoned for failing to complete the application pursuant to 37 CFR 1.53(d) and this, as well as the changes to 37 CFR 1.53 and 1.78, indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid or the processing and retention fee of § 1.21(f) must be paid within 1 year from notification under § 53(d).

Total fees enclosed \$ 638.00

(Application Transmittal [4-1]—page 5 of 7)

14. Method of Payment of Fees

- ☒ Check in the amount of \$ 638.00
- ☐ Charge Account No. _____ in the amount of \$ _____. A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 CFR 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

- ☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 11-215.

- ☒ 37 CFR 1.16(a), (f) or (g) (filing fees)
- ☒ 37 CFR 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 CFR 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

- ☒ 37 CFR 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- ☒ 37 CFR 1.17 (application processing fees)

WARNING: While 37 CFR 1.17(a), (b), (c) and (d) deal with extensions of time under § 1.136(a) this authorization should be made only with the knowledge that: "Submission of the appropriate extension fee under 37 C.F.R. 1.136(a) is to no avail unless a request or petition for extension is filed." (Emphasis added). Notice of November 5, 1985 (1060 O.G. 27).

- ☐ 37 CFR 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 CFR 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 CFR 1.311(b).

NOTE: 37 CFR 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . issue fee". From the wording of 37 CFR 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

16. Instructions As To Overpayment

- ☐ credit Account No. _____
- ☒ refund

Reg. No. -24,419

Tel. No. (212) 687-6000


SIGNATURE OF ATTORNEY

Gerald Levy

Type or print name of attorney
711 Third Avenue

P.O. Address

New York, New York 10017

(Application Transmittal [4-1]—page 6 of 7)

☐ **Incorporation by reference of added pages**

Check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED

☐ Plus Added Pages For New Application Transmittal Where Benefit Of Prior U.S. Application(s) Claimed

Number of pages added _____

☐ Plus Added Pages For Papers Referred To In Item 4 Above

Number of pages added _____

☒ **Statement Where No Further Pages Added**

(If no further pages form a part of this Transmittal then end this Transmittal with this page and check the following item)

☒ This transmittal ends with this page.

Print Of Drawings
As Originally Filed

07 629436

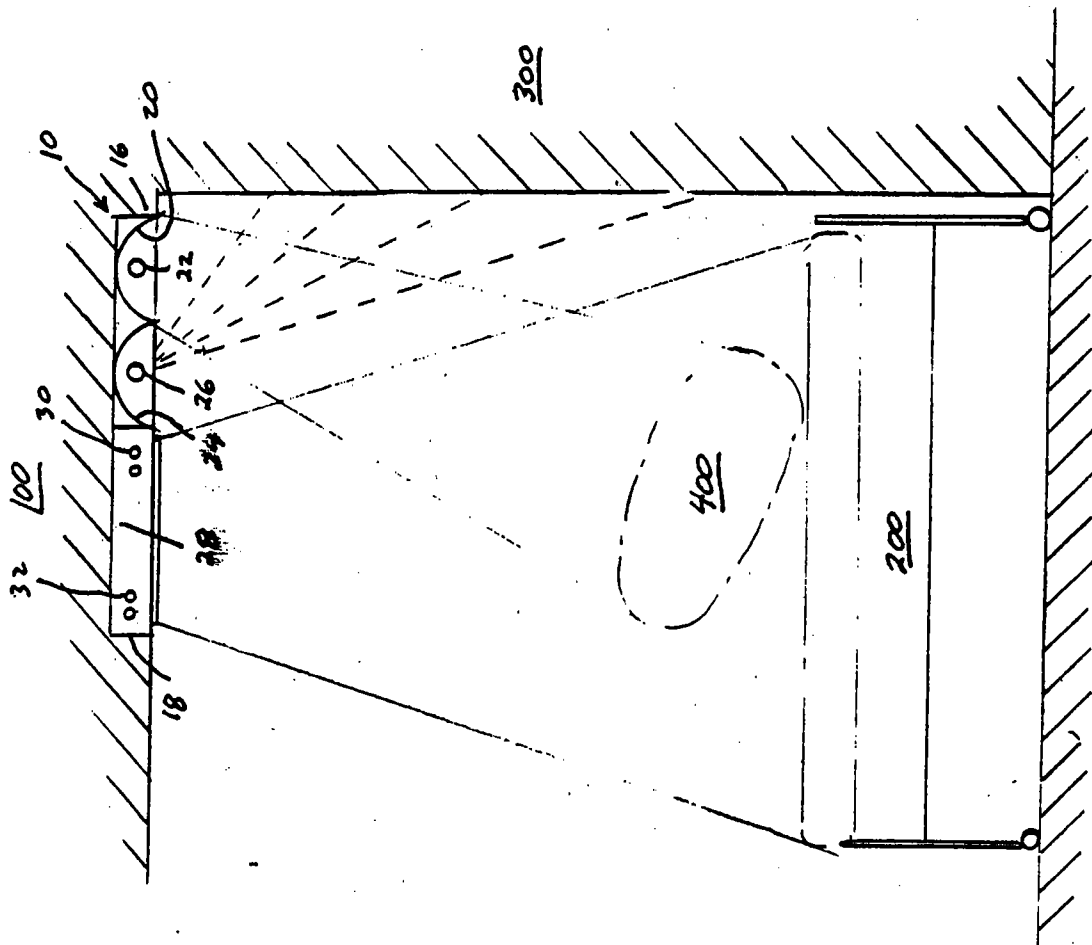
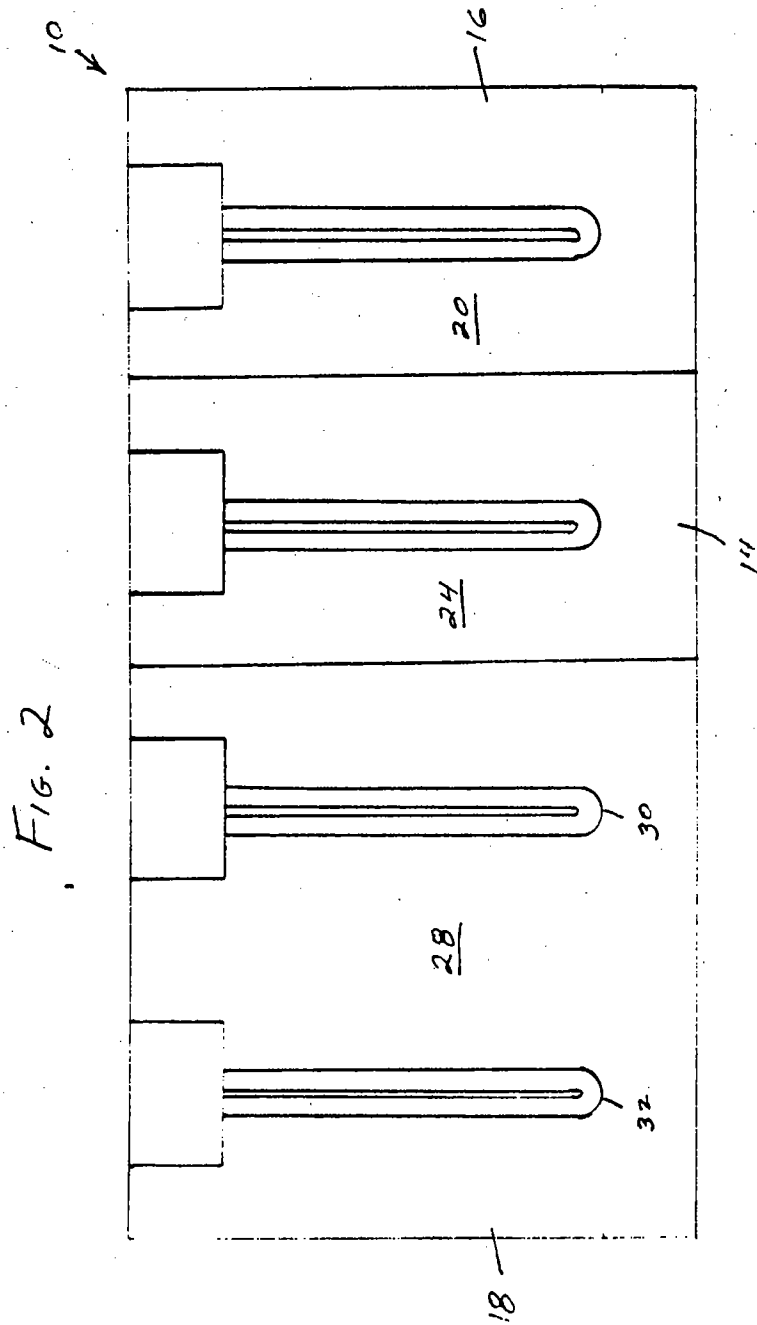


FIG. 1





UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/629,436	12/18/90	FABBRI	W 1801-M-47
			EXAMINER
			HUSAR, S
		ART UNIT	PAPER NUMBER
		346	#2
DATE MAILED:			03/20/91

GERALD LEVY
KANE, DALSIMER, SULLIVAN, KURUCZ
LEVY, EISELE AND RICHARD
711 THIRD AVE.
NEW YORK, NY 10017-4059

NOTICE OF ALLOWABILITY

PART I.

1. ☐ This communication is responsive to _____.
2. ☒ All the claims being allowable, PROSECUTION ON THE MERITS IS ~~(OR REMAINS)~~ CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☒ The allowed claims are 1-14.
4. ☐ The drawings filed on _____ are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received. ☐ not been received. ☐ been filed in parent application Serial No. _____, filed on _____.
6. ☐ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☐ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☒ Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☒ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
 - a. ☒ Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto ~~or to Paper No.~~ CORRECTION IS REQUIRED.
 - b. ☐ The proposed drawing correction filed on _____ has been approved by the examiner. CORRECTION IS REQUIRED.
 - c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
 - d. ☒ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

Attachments:

- ☐ Examiner's Amendment
- ☐ Examiner Interview Summary Record, PTOL-413
- ☐ Reasons for Allowance
- ☒ Notice of References Cited, PTO-892
- ☐ Information Disclosure Citation, PTO-1449

- ☒ Notice of Informal Application, PTO-152
- ☒ Notice re Patent Drawings, PTO-948
- ☐ Listing of Bonded Draftsmen
- ☐ Other

Stephen F. Husar
STEPHEN F. HUSAR
PRIMARY EXAMINER
ART UNIT 346

**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: Box ISSUE FEE
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

GERALD LEVY
KANE, DALSIMER, SULLIVAN, KURUCZ
LEVY, EISELE AND RICHARD
711 THIRD AVE.
NEW YORK, NY 10017-4059

**NOTICE OF ALLOWANCE
AND ISSUE FEE DUE**

- ☒ Note attached communication from the Examiner
☐ This notice is issued in view of applicant's communication filed _____

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/629,436	12/18/90	014	HUSAR, S 346	03/20/91
First Named Applicant	FABBRI, WILLIAM C.			
TITLE OF INVENTION	INTEGRATED MEDICAL LIGHT SYSTEM			

	ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	1801-M-47	362-033.000	N96	UTILITY	NO	\$1050.00	06/20/91

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:**I. Review the SMALL ENTITY Status shown above.**

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the Status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
B. If the Status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by a charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, Part C of this notice should also be completed and returned.

III. All communications regarding this application must give series code (or filing date), serial number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Patents Issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees.

PATENT AND TRADEMARK OFFICE COPY

PTO FORM 948
(REV. 5-90)U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

ATTACHMENT TO PAPER NUMBER

APPLICATION NUMBER

629436

#2

NOTICE OF DRAFTSMAN'S PATENT DRAWING REVIEW**THE PTO DRAFTSMEN REVIEW ALL ORIGINALLY FILED DRAWINGS REGARDLESS
OF WHETHER THEY WERE DESIGNATED AS INFORMAL OR FORMAL.**

The drawings filed

12/18/90

A. ☐ are approved.B. ☒ are objected to under 37 CFR 1.84 for the reason(s) checked below. The examiner will require submission of new, corrected drawings at the appropriate time. Corrected drawings must be submitted according to the instructions listed on the back of this Notice.

1. Paper and ink. 37 CFR 1.84(a)

☒ Sheet(s) Fig. 1 Poor.

(copy machine mark on paper)

2. Size of Sheet and Margins. 37 CFR 1.84(b)

Acceptable Paper Sizes and Margins

Margin	Paper Size		
	8 1/2 by 14 inches	8 1/2 by 13 inches	DIN size A4 21 by 29.7 cm.
Top	2 inches	1 inch	2.5 cm.
Left	1/4 inch	1/4 inch	2.5 cm.
Right	1/4 inch	1/4 inch	1.5 cm.
Bottom	1/4 inch	1/4 inch	1.0 cm.

☐ Proper Size Paper Required.
All Sheets Must be Same Size.
Sheet(s) _____☐ Proper Margins Required.
Sheet(s) _____☐ TOP ☐ RIGHT☐ LEFT ☐ BOTTOM

3. Character of Lines. 37 CFR 1.84(c)

☒ Lines Pale or Rough and Blurred.
Fig(s) 1, 2☐ Solid Black Shading Not Allowed.
Fig(s) _____

4. Hatching and Shading. 37 CFR 1.84(d)

☐ Shade Lines are Required.

Fig(s) _____

☐ Criss-Cross Hatching Not Allowed.

Fig(s) _____

☐ Double Line Hatching Not Allowed.

Fig(s) _____

☐ Parts in Section Must be Hatched.

Fig(s) _____

5. Reference Characters. 37 CFR 1.84(f)

☒ Reference Characters Poor or Incorrectly Sized.
Fig(s) 1, 2☐ Reference Characters Placed Incorrectly.
Fig(s) _____

6. Views. 37 CFR 1.84(i) & (j)

☐ Figures Must be Numbered Properly.☐ Figures Must Not be Connected.
Fig(s) _____7. ☐ Photographs Not Approved.8. ☐ Other.

Telephone inquiries concerning this review should be directed to the Chief Draftsman at telephone number (703) 557-6404.

Reviewing Draftsman_____
Date

1/22/91

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 3-78)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 629,436		GROUP/ART UNIT 346		ATTACHMENT TO PAPER NUMBER #2				
NOTICE OF REFERENCES CITED				APPLICANT(S) Fabbri et al.								
U.S. PATENT DOCUMENTS												
*		DOCUMENT NO.					DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE	
	A	3928757					12/1975	Nelson	362	804	X	
	B	4204274					5/1980	Lüderitz	362	225	X	
	C											
	D											
	E											
	F											
	G											
	H											
	I											
	J											
	K											
FOREIGN PATENT DOCUMENTS												
*		DOCUMENT NO.					DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG. PP. SPEC.
	L											
	M											
	N											
	O											
	P											
	Q											
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)												
	R											
	S											
	T											
	U											
EXAMINER S. Huan							DATE 3/1991					
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)												

PART B - ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 6 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advanced orders and notification of maintenance fees will be mailed to addressee entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block 3 below; or (b) providing the PTO with a separate FEE ADDRESS for maintenance fee notifications with the payment of Issue Fee or thereafter. See reverse for Certificate of Mailing.

1. CORRESPONDENCE ADDRESS	2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)
GERALD LEVY KANE, DALSIMER, SULLIVAN, KURUCZ LEVY, EISELE AND RICHARD 711 THIRD AVE. NEW YORK, NY 10017-4059	INVENTOR'S NAME Street Address City, State and ZIP Code CO-INVENTOR'S NAME Street Address City, State and ZIP Code <input type="checkbox"/> Check if additional changes are on reverse side

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/629,436	12/18/90	014	MUSAR, NS	346 03/20/91
First Named Applicant	WILLIAM C. (mutsngi2)			

TITLE OF INVENTION: INTEGRATED MEDICAL LIGHT SYSTEM

ATTY'S DOCKET NO.	CLASS SUBCLASS	BATCH NO.	APPLN TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	1301-M-42	00000000000000000000	UTILITY	NO	1050.00	06/20/91

3. Further correspondence to be mailed to the following: Gerald Levy, Esq. Kane, Dalsimer, Sullivan, Kurucz, Levy, Eisele and Richard 711 Third Avenue New York, New York 10017	4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.	1 Kane, Dalsimer, Sullivan, Kurucz, 2 Levy, Eisele and Richard 3
--	--	--

DO NOT USE THIS SPACE

5. ASSIGNMENT (Data to be printed on the patent) (print or type)	6a. The following fees are enclosed:
(1) NAME OF ASSIGNEE: KEENE CORPORATION	<input checked="" type="checkbox"/> Issue Fee <input type="checkbox"/> Advanced Order - # of Copies _____ (Minimum of 10)
(2) ADDRESS: (City & State or Country) 2345 Vauxhall Road, Union, New Jersey 07083	6b. The following fees should be charged to: DEPOSIT ACCOUNT NUMBER _____ (Enclose Part C)
(3) STATE OF INCORPORATION, IF ASSIGNEE IS A CORPORATION New York	<input type="checkbox"/> Issue Fee <input type="checkbox"/> Advanced Order - # of Copies _____ (Minimum of 10)
A. <input type="checkbox"/> This application is NOT assigned. <input checked="" type="checkbox"/> Assignment previously submitted to the Patent and Trademark Office. <input type="checkbox"/> Assignment is being submitted under separate cover. Assignments should be directed to Box ASSIGNMENTS, P.O. Box 1000, Washington, DC 20540.	<input checked="" type="checkbox"/> Any Deficiencies in Enclosed Fees The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified above. (Date) 5/28/91
PLEASE NOTE: Unless an assignee is identified, the assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.	NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

Notes: _____



1801-M-47

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

B

#3
Logg
4/12/91

Applicant: Fabbri et al.

Serial No.: 07/629,436

Filed: December 18, 1990

Art Unit: 346

For: Integrated Medical Light System

Examiner: Husar

RECEIVED

711 Third Avenue
New York, New York
(212) 687-6000

91 APR -5 AB:48

PAITHIA 10017 OFFICE

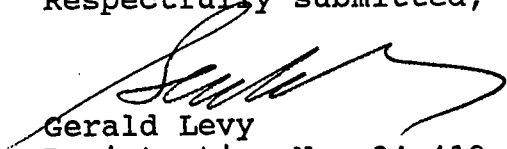
TRANSMITTAL OF FORMAL DRAWINGS

Box Issue Fee, Batch N96
Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

S I R:

Enclosed please find formal drawings for the above-identified application.

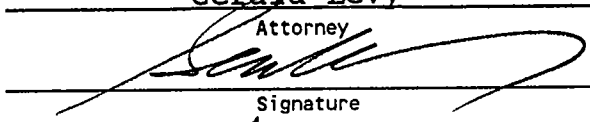
Respectfully submitted,


Gerald Levy
Registration No. 24,419

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on March 29, 1991
Date of Deposit

Gerald Levy

Attorney


Signature

March 29, 1991

Date of Signature

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 11-215, Order No. 1801-M-47

629,436

5038254

362 33

D14

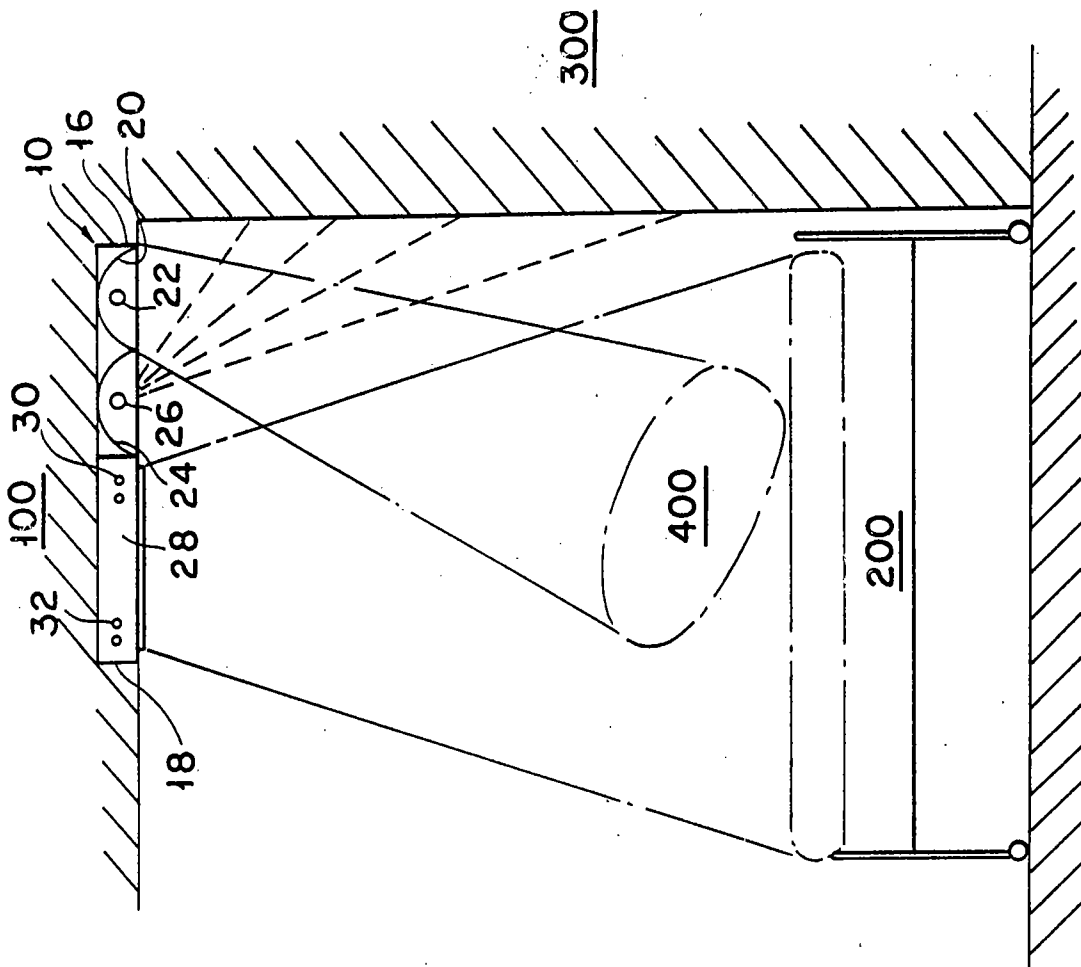


FIG. 1

609,436

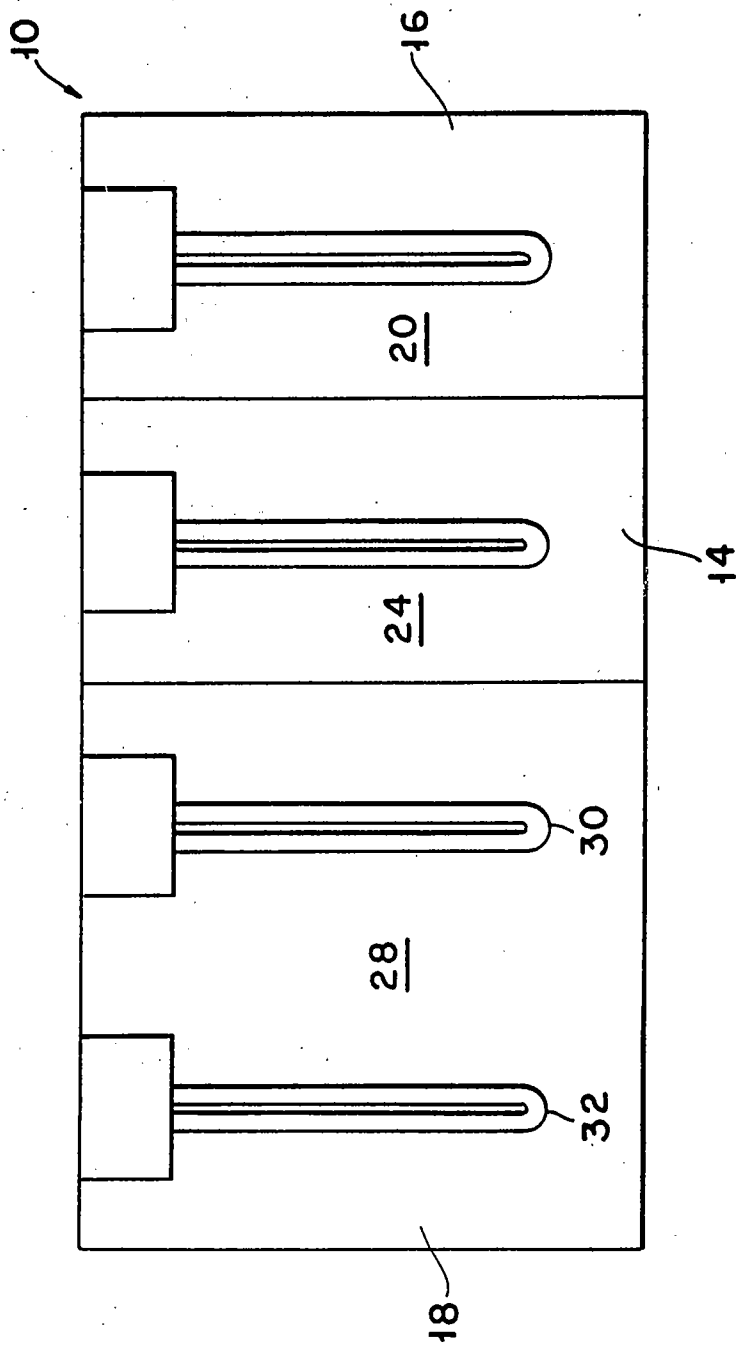


FIG. 2

Notes: _____

The
United
States
of
America



PTO UTILITY GRANT

Paper Number 4

The Commissioner of Patents
and Trademarks

*Has received an application for a patent
for a new and useful invention. The title
and description of the invention are en-
closed. The requirements of law have
been complied with, and it has been de-
termined that a patent on the invention
shall be granted under the law.*

Therefore, this

United States Patent

*Grants to the person or persons having
title to this patent the right to exclude
others from making, using or selling the
invention throughout the United States
of America for the term of seventeen
years from the date of the patent, sub-
ject to the payment of maintenance fees
as provided by law.*

Harry F. Markush, Jr.

Commissioner of Patents and Trademarks

marcia L Campbell

Attest

PTO-1584

Y'S
NO.

M-47

(rev. 10-78)

nt Fig.

may be
employees

EXHIBIT 3

**UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS**

**GENLYTE THOMAS GROUP, LLC
Plaintiff**

v.

**ARCHITECTURAL LIGHTING SYSTEMS
Defendant**

**STATEMENT OF THOMAS M. LEMONS
A PERSON SKILLED IN THE LIGHTING ARTS**

INTRODUCTION

I have been asked by the Attorney for the plaintiff to provide an interpretation of certain terms in Patent 5,038,254 (the '254 patent) as one skilled in the medical lighting art.

QUALIFICATIONS

My Curriculum Vitae is attached hereto (Exhibit A) including a list of clients, a list of patents and other awards as well as all technical publications. I am a registered professional engineer (electrical) who has practiced product and lighting installation design in the lighting field for 56 years. This experience has provided me an appreciation of the level of skills that existed in the period from 1990 through 1991. I have been granted 17 U. S. Patents which have provided me a general appreciation of the standards of patentability – namely novelty, utility and non-obviousness.

My lighting career started in 1950 when at the age of 16 I founded my own theater lighting and sound business, Audio-Lite Company. I operated this business while attending engineering school at Purdue University and sold it shortly after graduation. After receiving my B.S. in Electrical Engineering from Purdue in 1956, I was employed by Sylvania Electric Products, Inc. as a lighting applications and development engineer where I worked for 13 years until 1970. In 1970 I founded TLA-Lighting Consultants, Inc. which I still operate today. In 1979, I also co-founded ARC Sales, Inc., a specialty lighting product sales and manufacturing company, which I operated until I sold it in 2001.

I have found during my lighting career that a "Person of Ordinary Skill in the Art" has a combination of training and experience. The training can either be four years of technical schooling such as an engineering degree plus four years of experience in product/optical design or 8 years of on the job training which includes product and optical design for the

specific lighting market in question. As seen in my CV, I meet and exceed the schooling and experience requirements and my consulting to several medical product manufacturers including ALM S.A. where I designed a patented surgical light (U. S. Patent No. 5,485,319) identifies that I have the medical lighting experience.

Some of my lighting design projects include navigational lighting of the Panama Canal, field lighting for Yankee Stadium and Fenway Park and product and facility design for Haworth Furniture in Holland, Michigan. I have been a member of many technical committees of the Illuminating Engineering Society of North America ("IESNA") as well as the International Commission on Illumination ("CIE"). This has included the Light Control and Luminaire Design Committee of the IESNA that I presently chair. In the CIE, I am designated as the USA Expert for Division 5 that prepares standards and reports on outdoor and specialty lighting. I am a Fellow of the IESNA and the United States Institute for Theatre Technology.

My rate of compensation paid by Genlyte for my services is \$140 per hour and I have not yet received compensation for my ALS activity. I would also note that I was contacted earlier this year by ALS to be their expert in this case but I was previously contacted by Genlyte in January of 2005 to be their expert and therefore I declined.

TESTIFYING EXPERIENCE IN THE PRIOR FIVE YEARS

To the best of my recollection, I have testified at trial or by deposition in the following cases in the past 5 years:

2001 – *L. S. I., Inc. v. Spaulding Lighting Corp.* Deposition @ Hunton Williams, Washington, DC

2002-3 – *Genlyte Thomas Group, LLC v. National Service Industries, Inc. et al*, District Court of the Western District of Kentucky

2004 – *Ferrel Rimer v. Regal Cinemas, Inc.* Circuit Court, Broward County, Florida

2004-5 – *Henry Boyer and Kathleen Boyer v. Fleet National Group, Inc., Tiverton Associates and John Doe*, Providence, RI Superior Court

2006 – *Sportlite, Inc. v. Genlyte Thomas Group, LLC*, District Court of Arizona

2006 – *TELE-CONS, Inc. and Michael Moisin v. Harmony Lighting, Inc. et al.* District Court of MA, (Technical Expert for Judge Lindsay)

2006 – *Jeow N. Tseng v. Home Depot and Wal-Mart Stores, Inc.*, Western District of Washington

MATERIAL I CONSIDERED IN FORMING MY OPINION

The materials that I have used in creating this statement are as follows:

U. S. Patent No. 5,038,254
 Webster's New Collegiate Dictionary, 1979
 IESNA Lighting Handbook, Reference Volume, 1984
 IESNA Lighting Handbook, Application Volume, 1987
 IESNA Lighting Handbook, 8th Edition, 1993

CLAIM CONSTRUCTION

There are two independent claims (Claims 1 and 3) and several dependent claims (Claims 2, 4, 5, 7, 13 and 14) that are at issue. There is one term that requires a 112/6 Analysis because of the use of the word *means*. My understanding of the meaning of specific terms in these claims including the 112/6 analysis of one is as follows:

Claim 1 112/6 Analysis

This term uses the word “means” and thereafter recites the function performed by the “means”. The following provides a meaning for the function and also identifies the structure for performing the function.

TERM	MEANING/FUNCTION	COMMENT/STRUCTURE
Means for ceiling-mounting said body	Surface or recessed installation on or into a ceiling.	Column 3, starting at line 12 of '254 patent states “lighting fixture 10 to be packaged in a two foot by four foot configuration and thereby replace a conventional troffer.” The methods used for mounting conventional troffers are well known in the industry. A conventional surface mounted troffer is fastened directly to a ceiling using mounting holes provided in the back surface of the body. Anchor bolts or screws can be used to mount through these holes directly to a structural element in or behind the ceiling and threaded rod can be used at these holes where the ceiling will not support the luminaire and it must be suspended from structural elements up above the ceiling. A conventional recessed troffer is mounted into two primary types of ceilings which are a grid or T-bar

TERM	MEANING/FUNCTION	COMMENT/STRUCTURE
		construction and a plaster or drywall construction. A grid or T-bar ceiling with the normal 2 x 2 or 2 x 4 support member spacing allows the troffer to be directly mounted into a two foot by four foot (or 2x2) opening in the grid since the face of the troffer has a flat flange around it that sits on the inside flat face surface of the grid. When recessed into a plaster or drywall ceiling, a plaster frame is normally used that again provides a lip around a two foot by four foot (or 2x2) opening that allows the troffer face flange to rest on the lip. The grid or T-bar ceiling allows the greatest ease to move the luminaire when a patient room changes from a single to a multi patient room. It is also fairly easy to change the location of a surface mounted luminaire and it is very difficult to move fixtures recessed into plaster or drywall ceilings.

Other Claim 1 Terms

TERM	MEANING	COMMENT/SUPPORT
oriented to direct light	Set or arranged to direct illumination.	Column 2, starting at line 45 of '254 patent states "to provide a direct light to reading area 400 of bed 200".
downwardly	A direction below the luminaire	Column 1, starting at line 65 of '254 patent states "The lighting system is ...placed substantially over the head of the patent's bed." In column 2, starting at line 3 states "A first light fixture...designed to direct light toward the forward portion of the patient's bed to allow a patient to read comfortably." Therefore the light is directed down onto the bed.

TERM	MEANING	COMMENT/SUPPORT
a selected reading area	A zone where a patient reads material.	Column 1 starting at line 3 states "A first light fixture...designed to direct light toward the forward portion of the patient's bed to allow a patient to read comfortably." Therefore the zone is at an area between the patient's chest and waist.
downwardly and outwardly	A direction below and away from center.	Column 2, starting at line 53 and again at lines 58 and 63 of '254 patent states that the ambient fixture directs light "to reflect or bounce light from wall 300", "configured so as not to direct glare toward the head of the bed" and "configured so as not to direct glare to areas adjacent to bed 200". Therefore the fixture directs light to the bed and area around the bed.
reflected back	The redirection of light by a surface.	Column 2, starting at line 53 states "to reflect or bounce light from wall 300 thereby providing ambient light to bed 200."
broad area	The area of the bed and around the bed.	As noted above the light is directed over the bed and area around the bed.

Claims 2 & 4

TERM	MEANING	COMMENT/SUPPORT
reflector	A device used to redirect flux from a source by the process of reflection.	The IESNA Lighting Handbook, Reference Volume, 1984, provides this definition based on accepted industry practice which is consistent with the '254 patent. (Exhibit B)

Claim 3

The same terms as listed for Claim 1 plus:

TERM	MEANING	COMMENT/SUPPORT
a selected patient examination area	An area of the patient's bed used for examination.	Column 2 starting at line 15 states that "the entire area of the bed is efficiently illuminated" by the examination light. The examination area will depend on the type of procedure performed on the patient and therefore the light is only needed in an area of the bed used for examinations by doctors and nurses rather than the whole bed as stated in the above quote for a preferred embodiment.

Claims 4, 5 & 7

TERM	MEANING	COMMENT/SUPPORT
fluorescent assembly	A unit of lamps and sockets.	Column 4, starting at line 8 states "said third light fixture includes a third reflector and a fluorescent assembly therewithin." Therefore the fluorescent assembly is the fluorescent lamps and sockets that with the reflector comprise the third light fixture.

Claims 5 & 7

TERM	MEANING	COMMENT/SUPPORT
light distribution pattern	A three dimensional array of flux emitted by a lamp.	Column 3, starting at line 4 states "fluorescent bulbs 30, 32 have a characteristic directional light distribution pattern oriented in the direction perpendicular to the bulbs".

Claims 13 & 14

TERM	MEANING	COMMENT/SUPPORT
glare	The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort or loss in visual performance and visibility.	The IESNA Lighting Handbook, Reference Volume, 1984, provides this definition based on accepted industry practice which is consistent with the '254 patent. (Exhibit B)

DISCUSSION

The importance of the identification that the product is a medical light is critical for a "Person of Ordinary Skill in the Art" to understand the application need and required performance of the product. In the IESNA Handbook, Application Volume, 1987, in the section on lighting design considerations for patient rooms, the following statement is made:

"The patient, nurses, doctors and housekeeping personnel require different illuminance levels, in any given room, to accommodate their individual needs. This range of lighting is needed for a variety of nursing services; it should be acceptable to all patients occupying the same room, and satisfy the lighting needs and desires of the patients whose only field or view may be the ceiling."

Without the knowledge and experience in lighting patient beds, it is not possible to understand how to design an acceptable patient bed lighting system without reverse engineering an existing acceptable product. In addition to the above quote, the IESNA Lighting Handbook, Application Volume, 1987, identifies the state of the art of patient room lighting prior to 1990 as illustrated by Figures 7-6 and 7-8 (Exhibit C). In the IESNA Lighting Handbook, 8th Edition (1993), the Genlyte product made according to the '254 patent is illustrated in Figure 17-7 (Exhibit D) which replaced the previous illustrations and identifies the medical industry acceptance of this product within three years.

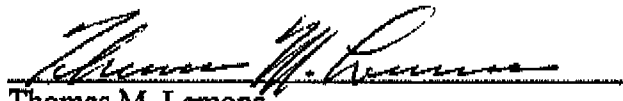
It must be noted that the claims for the second light fixture (the ambient light) has two designated directions for the directed light. The first is the directing of light down onto the area below the assembly and the second is to direct light onto the adjacent wall. As noted in the above quote from the IESNA Handbook, the patient's only view may be the ceiling and therefore the optical design of the luminaire must limit glare which might be directed down into the eyes of the patient or into the eyes of others in the room. As noted by the definition of "glare", the viewer's adaptation is a factor which limits glare and the

illumination on the wall increases the illuminated area seen by the patient which raises the eye adaptation and reduces the potential for glare.

CONCLUSION

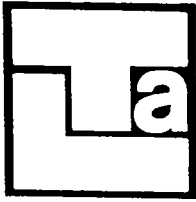
In preparing the claim definitions I have used material disclosed and taught by the patent, the reference items I have cited, dictionary and industry definitions of terms and the knowledge I have gained in 56 years work in the lighting industry. I believe that this report is a true and correct evaluation of the claims in question.

Executed this 18th day of May, 2006

A handwritten signature in cursive script, appearing to read "Thomas M. Lemons", is written over a horizontal line.

Thomas M. Lemons
TLA-Lighting Consultants, Inc.
7 Pond Street, Salem, MA 01970

EXHIBIT A



Thomas M. Lemons, FIES, PE

Received his Bachelor of Science from Purdue University in Electrical Engineering with emphasis on Illumination and Optics in 1956. He is the founder and President of TLA-Lighting Consultants, Inc., which he founded in 1970. Previously he was an applications and development engineer at Sylvania Lighting Products where he worked to develop new products and to find new uses for existing products. In high school and college, he was a partner in a firm which rented and sold theatrical lighting and sound systems.

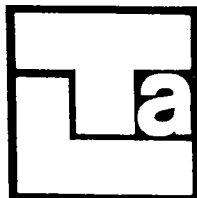
He is active in many societies, such as the Illuminating Engineering Society of North America (IESNA), International Commission on Illumination (CIE) and United States Institute for Theatre Technology (USITT). He is a Fellow of the IESNA and USITT. He has served as the IESNA Regional VP and the VP of Administration and Operation. He recently served as the Secretary of the United States National Committee of the CIE and he is the U. S. Member to Division 5 (Outdoor and Specialty Lighting) of the CIE. He is a Registered Professional Engineer in the Commonwealth of Massachusetts.

Mr. Lemons has chaired many IESNA and CIE technical committees including the Light Control and Luminaire Design; Sports Lighting; Institutions Lighting; Theatre, TV and Film Lighting and Library Lighting Committees. He has helped prepare energy standards for new buildings (ASHRAE 90-75) as well as one for existing places of public assembly (ASHRAE/IES 100.6-1981) and has helped write a manual of accepted practice for ASHRAE 90-75. He has presented and published over seventy technical papers, has conducted seminars on reflector design and light sources and has taught various illumination subjects. Mr. Lemons has been awarded 17 USA patents and several foreign patents in the field of optics and illumination.

His list of credits include Boston's Fenway Park; New York's Yankee Stadium and Philadelphia's Spectrum Arena as major sports lighting projects. He has provided office lighting designs for the Haworth Center, Holland, Michigan; PG&E Diablo Canyon Power Plant in California and Clark Equipment Company, South Bend, Indiana. He has provided exhibit lighting designs for several Haworth Showrooms; the MSPCA Macomber Farm, Framingham, Massachusetts and the Museum of Fine Arts, Portland, Maine. His optical design clients include Lam Lighting; The 3M Company; Haworth, Inc.; Macbeth Division, Kollmorgan Corporation; Black and Decker; Altman Stage Lighting Company and many others.

TLA - Lighting Consultants, Inc.

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Thomas M. Lemons, FIES, PE

EDUCATION

BS in EE from Purdue University, 1956

BUSINESS

1970 – Present: Founder and President of TLA-Lighting Consultants, Inc.

1979 – 2001: Co-Founder and President of ARC Sales, Inc.

1956 – 1970: Applications and Development Engineer at Lighting Division
Sylvania Electric Products, Inc.

1950 – 1956: Partner in Audio-Lite Company

IESNA ACTIVITIES

Joined the IESNA (Illuminating Engineering Society of North America) as a student in 1956
Committee Membership:

1. Lamp Subcommittee of Aviation Committee, 1961-1964
 2. Sports Lighting Committee, 1965-Present; Chairman 1970-1973
 3. Theater, Television and Film Lighting Committee, 1965-Present; Chairman 1978-1981
 4. Institutions Committee, 1969-1980, Chairman 1974-1977
 5. Energy Management Committee, 1975-1984
 6. Library Lighting Committee, 1980-1990; Chairman 1980-1984
 7. Light Control and Luminaire Design Committee, 1982-Present; Chairman 1982-83/1990-94/2001-
 8. Handbook Committee, Chairman 1989-1992
 9. Local Arrangements Committee (Boston Conference), Chairman 1985-1986
 10. Group Manager-Design and Applications, 1982-1984
 11. Polarized Lighting Task Group, Chairman 1993-1999
 12. DSA Committee, 1992-1995, Chairman 1994-1995
 13. Technical Review Council, 1994-1996
- New England Section -Board of Managers, 1971-1978; President 1975-1977
Northeast Region VP, 1979-1981
Vice President - Administration and Operation, 1987-1989
Elected Fellow, 1975
Board of Fellows, 1976-1979, Chairman 1977-1979
Distinguished Service Award, 1983
Designer's Lighting Forum, 1971-1993; RVP Liaison 1979-1980

PROFESSIONAL ACTIVITIES

Registered Professional Engineer in Massachusetts

Member of:

International Commission on Illumination

USA Member of Division 5 – Exterior and Specialty Lighting

Secretary, U. S. National Committee, 1999-2003

United States Institute for Theater Technology (Fellow)

International Dark-Sky Association

Listed in Who's Who In Engineering - Sixth Edition

Author of over seventy technical papers

17 U. S. and 5 Canadian Patent Awards

TLA - Lighting Consultants, Inc.

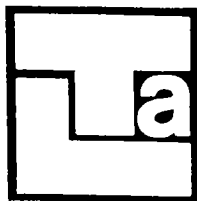
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CLIENT LIST (partial)

Alm S. A.
Altman Stage Lighting Co.
Appleton Electric
Arc Lighting Systems
Bausch and Lomb
Cliplight Manufacturing Co.
Code 3
Crownlite Manufacturing Co.
Custom Lighting
Custom Metalcraft
Diamond Lights
Deep Sea Power and Light
Deposition Sciences, Inc.
Exide Electronics
Fusion Lighting
Fusion Systems Corp.
Hanovia Lamp
Haworth Inc.
Hi-Tek Div. Lithonia Lighting
House of Troy
Hubbell Lighting
Intrepid Lighting
Kliegal Brothers Lighting
Koehler Manufacturing
Kollmorgan Corp. (Macbeth Div. and Macbeth Color Div.)
Lam, Incorporated
Lampi Corporation
Lightcraft of California, Sterling Lighting Div.
Lighting and Electronics
Lighting Services Inc.
Linear Lighting
Litecontrol Corp.
Mycro Group Co., Musco Lighting Div.
Norelco Lighting Div. of Philips
Osram Sylvania Inc.
Qualite Sports Lighting Inc.
Rosco Laboratories
Simplex Time Recording co.
Space Age Electronics, Inc.
Spaulding Lighting Corp.
Sunnights, Inc.
UDEEC Corporation



Awards
Thomas M. Lemons

U.S. Patents:

Spotlight Lamp No. 3,428,800

Sky Projector No. 3,762,083

High Intensity Spotlight No. 3,940,606 (RE 31,003)

High Intensity Indirect Lighting Fixture No. 3,950,638

Replaceable Light Source Assembly No. 4,536,832

Interior Indirect Lighting No. 4,569,003

Modulated Optical Energy Source No. 4,668,869

Outdoor Lighting System No. 4,864,476

Task Light No. 5,036,436

Asymmetric Sports Luminaire No. 5,313,379

Visual Signaling Device No. 5,390,095

Medical Device No. 5,485,319

Emergency Strobe Light No. 5,622,427

Glare Control Sports Lighting Luminaire No. 5,730,521

Emergency Strobe Light No. 5,865,527

Method and Apparatus for Leak Detection No. 6,177,678

LED Inspection Lamp No. 6,979,104

Society of Motion Picture and Television Engineers - Journal
Honorable Mention Award for 1975

IES of NA - Distinguished Service Award in 1983

Made a Fellow of *IES* in 1975 and the *USITT* in 1979

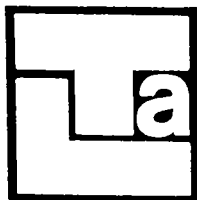
Listed in *Who's Who in Engineering* - Sixth Edition

ASHRAE Award of Merit for STD 90-75

Patents 01-11-06

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PUBLICATIONS

PUBLISHER:

OPTICAL DESIGN OF REFLECTORS - 3RD EDITION (1989)

CONTRIBUTING EDITOR:

LIGHTING DESIGN AND APPLICATION
TENNIS INDUSTRY
SYLVANIA LIGHTING HANDBOOK
CHAPTER ON LIGHTING FOR PLANNING AREAS AND FACILITIES
FOR HEALTH, PHYSICAL EDUCATION AND RECREATION
(PUBLISHED IN 1984 BY AAHPER AND ATHLETIC INSTITUTE)
OPTICAL ENCYCLOPEDIA AND DIRECTORY
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IEEE GRAY BOOK - CHAPTER 10, LIGHTING

TECHNICAL PAPERS:

LABORATORY TESTING OF PANCAKE LIGHTS (1962)

QUARTZ-IODINE LAMP LIMITATIONS LEAD TO NEW DESIGNS (1964)

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INDOOR LIGHTING FOR SPORTS AND RECREATIONAL ACTIVITIES (1967)

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CHARACTERISTICS OF THEATRICAL LIGHTING EQUIPMENT USING
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FIXTURES - NEW CONCEPTS AND THEIR EXPANDING MARKET (1968)

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ELECTRONIC BALLASTS FOR HID LAMPS (1995)

MODELING FOR SPORTS LIGHTING (1999)

EXTERIOR LUMINAIRE BEAM PATTERNS (2005)

EXHIBIT B

IES LIGHTING HANDBOOK

1984

Reference Volume

JOHN E. KAUFMAN, PE, FIES

Editor

JACK F. CHRISTENSEN

Associate Editor

Published by

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1-14 DICTIONARY OF TERMS

IES LIGHTING HANDBOOK
1984 REFERENCE VOLUME

faces based on the average flux transfer between surfaces.

fog (adverse-weather) lamps: units which may be used in lieu of headlamps or in connection with the lower beam headlights to provide road illumination under conditions of rain, snow, dust or fog.

follow spot: any instrument operated so as to follow the movement of an actor. Follow spots are usually high intensity controlled beam luminaires.

footcandle, fc: the unit of illuminance when the foot is taken as the unit of length. It is the illuminance on a surface one square foot in area on which there is a uniformly distributed flux of one lumen, or the illuminance produced on a surface all points of which are at a distance of one foot from a directionally uniform point source of one candela. See Fig. 1-2.

footcandle meter: See *illuminance meter*.

footlambert, fL: a unit of luminance equal to $1/\pi$ candela per square foot, or to the uniform luminance of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot, or to the average luminance of any surface emitting or reflecting light at that rate. See *units of luminance*. The use of this unit is deprecated.

NOTE: The average luminance of any reflecting surface in footlamberts is, therefore, the product of the illumination in footcandles by the luminous reflectance of the surface.

footlights: a set of striplights at the front edge of the stage platform used to soften face shadows cast by overhead luminaires and to add general toning lighting from below.

form factor, f_{1-2} : the ratio of the flux directly received by surface 2 (and due to lambertian surface 1) to the total flux emitted by surface 1. It is used in *flux transfer theory*.

$$f_{1-2} = (\Phi_{1-2})/(\Phi_1)$$

formation light: a navigation light especially provided to facilitate formation flying.

fovea: a small region at the center of the retina, subtending about two degrees, containing only cones but no rods and forming the site of most distinct vision.

foveal vision: See *central vision*.

Fresnel spotlight: a luminaire containing a lamp and a Fresnel lens (stepped "flat" lens with a textured back) which has variable field and beam angles obtained by changing the spacing between lamp and lens (flooding and spotting). The Fresnel produces a smooth, soft edge, defined beam of light.

fuselage lights: aircraft aeronautical lights, mounted on the top and bottom of the fuselage, used to supplement the navigation light.

G

gas-filled lamp: an incandescent lamp in which the filament operates in a bulb filled with one or more inert gases.

gaseous discharge: the emission of light from gas atoms excited by an electric current.

general color rendering index (R_a): measure of the average shift of 8 standardized colors chosen to be of intermediate saturation and spread throughout the range of hues. If the Color Rendering Index is not qualified as to the color samples used, R_a is assumed.

general diffuse lighting: lighting involving luminaires which distribute 40 to 60 per cent of the emitted light downward and the balance upward, sometimes with a strong component at 90 degrees (horizontal). See *direct-indirect lighting*.

general lighting: lighting designed to provide a substantially uniform level of illumination throughout an area, exclusive of any provision for special local requirements. See *direct lighting*, *semi-direct lighting*, *general diffuse lighting*, *direct-indirect lighting*, *semi-indirect lighting*, *indirect lighting*, *ceiling area lighting*, *localized general lighting*.

general purpose floodlight (GP): a weatherproof unit so constructed that the housing forms the reflecting surface. The assembly is enclosed by a cover glass.

germicidal effectiveness: See *bactericidal effectiveness*.

germicidal efficiency of radiant flux: See *bactericidal efficiency of radiant flux*.

germicidal exposure: See *bactericidal exposure*.

germicidal flux and flux density: See *bactericidal flux and flux density*.

germicidal lamp: a low pressure mercury lamp in which the envelope has high transmittance for 254-nanometer radiation. See *bactericidal lamp*.

glare: the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance and visibility. See *blinding glare*, *direct glare*, *disability glare*, *discomfort glare*.

NOTE: The magnitude of the sensation of glare depends upon such factors as the size, position and luminance of a source, the number of sources and the luminance to which the eyes are adapted.

globe: a transparent or diffusing enclosure intended to protect a lamp, to diffuse and redirect its light, or to change the color of the light.

glossmeter: an instrument for measuring gloss as a function of the directionally selective reflecting properties of a material in angles near to and including the direction giving specular reflection.

glow discharge: an electric discharge characterized by a low, approximately constant, current density at the cathode, low cathode temperature, and a high, approximately constant, voltage drop.

glow factor: a measure of the visible light response of a fluorescent material to "black light." It is equal to π times the luminance in candelas per square meter produced on the material divided by the in-

* π is omitted when the luminance is in footlamberts and flux density is in milliwatts per square foot.

1-26 DICTIONARY OF TERMS

IES LIGHTING HANDBOOK
1984 REFERENCE VOLUME

the incident flux leaves a surface or medium from the incident side, without change in frequency.

NOTE: Reflection is usually a combination of regular and diffuse reflection. See *regular (specular) reflection*, *diffuse reflection* and *veiling reflection*.

reflectivity: reflectance of a layer of a material of such a thickness that there is no change of reflectance with increase in thickness.

reflectometer: a photometer for measuring reflectance.

NOTE: Reflectometers may be visual or physical instruments.

reflector: a device used to redirect the luminous flux from a source by the process of reflection. See *retroreflector*.

reflector lamp: an incandescent filament or electric discharge lamp in which the outer blown glass bulb is coated with a reflecting material so as to direct the light (e.g., R- or ER-type lamps). The light transmitting region may be clear, frosted, patterned or phosphor coated.

reflex reflector: See *retro-reflector*.

refraction: the process by which the direction of a ray of light changes as it passes obliquely from one medium to another in which its speed is different.

refractor: a device used to redirect the luminous flux from a source, primarily by the process of refraction

regions of electromagnetic spectrum: for convenience of reference the electromagnetic spectrum is arbitrarily divided as follows:

Vacuum ultraviolet	
Extrem ultraviolet	10-100 nm
Far ultraviolet	100-200 nm
Middle ultraviolet	200-300 nm
Near ultraviolet	300-380 nm
Visible	380-770 nm
Near (short wavelength) infrared	770-1400 nm
Intermediate infrared	1400-5000 nm
Far (long wavelength) infrared	5000-1,000,000 nm

NOTE: The spectral limits indicated above have been chosen as a matter of practical convenience. There is a gradual transition from region to region without sharp delineation. Also, the division of the spectrum is not unique. In various fields of science the classifications may differ due to the phenomena of interest.

regressed luminaire: a luminaire mounted above the ceiling with the opening of the luminaire above the ceiling line. See *flush-mounted*, *surface-mounted*, *suspended* and *troffer*.

regular (specular) reflectance: the ratio of the flux leaving a surface or medium by regular (specular) reflection to the incident flux. See *regular (specular) reflection*.

regular (specular) reflection: that process by which incident flux is re-directed at the specular angle. See *specular angle*.

regular transmission: that process by which incident flux passes through a surface or medium without scattering. See *regular transmittance*.

regular transmittance: the ratio of the regularly

transmitted flux leaving a surface or medium to the incident flux.

relative contrast sensitivity RCS: the relation between the reciprocal of the luminous contrast of a task at visibility threshold and the background luminance expressed as a percentage of the value obtained under a very high level of diffuse task illumination.

relative erythral factor: See *erythral efficiency of radiant flux*.

relative luminosity: previously used term for *spectral luminous efficiency of radiant flux*.

relative luminosity factor: previously used term for *spectral luminous efficiency of radiant flux*.

resolving power: the ability of the eye to perceive the individual elements of a grating or any other periodic pattern with parallel elements. It is measured by the number of cycles per degree that can be resolved. The resolution threshold is the period of the pattern that can be just resolved. Visual acuity, in such a case, is the reciprocal of one-half of the period expressed in minutes. The resolution threshold for a pair of points or lines is the distance between them when they can just be distinguished as two, not one, expressed in minutes of arc.

resultant color shift: the difference between the perceived color of an object illuminated by a test source and that of the same object illuminated by the reference source, taking account of the state of chromatic adaptation in each case; i.e., the resultant of colorimetric shift and adaptive color shift.

retina: a membrane lining the more posterior part of the inside of the eye. It comprises photoreceptors (cones and rods) that are sensitive to light and nerve cells that transmit to the optic nerve the responses of the receptor elements.

retro-reflector (reflex reflector): a device designed to reflect light in a direction close to that at which it is incident, whatever the angle of incidence.

rhythmic light: a light, when observed from a fixed point, having a luminous intensity that changes periodically. See *equal interval light*, *flashing light*, *group flashing light*, *interrupted quick-flashing light*, *quick flashing light*, *occluding light*.

ribbon filament lamp: an incandescent lamp in which the luminous element is a tungsten ribbon.

NOTE: This type of lamp is often used as a standard in pyrometry and radiometry.

rods: retinal receptors which respond at low levels of luminance even down below the threshold for cones. At these levels there is no basis for perceiving differences in hue and saturation. No rods are found in the center of the fovea.

room cavity: the cavity formed by the plane of the luminaires, the work-plane, and the wall surfaces between these two planes.

room cavity ratio, RCR: a number indicating room cavity proportions calculated from length, width and height. See Section 9.

room index: a letter designation for a range of room ratios.

room ratio: a number indicating room proportions,

EXHIBIT C

IES LIGHTING HANDBOOK

1987

Application Volume

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7-10 INSTITUTIONS AND PUBLIC BUILDINGS

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by patient or nurse; however, when left on continuously, the luminance produced in the surrounding field of darkness is sometimes a source of annoyance to patients wishing to sleep.

For continuous use, the night-light recommended incorporates a low-brightness luminaire with louvered or refractive cover, flush wall type, installed so that its center is approximately 360 millimeters (14 inches) above the floor to direct a low illuminance along the floor where it is needed for walking or moving about in the room.

The important criterion for night lighting is limiting the source luminance. This luminance should not exceed 70 candelas per square meter (6.5 candelas per square foot) for continuous use, or 200 candelas per square meter (19 candelas per square foot) for a short time.

Examination. The lighting for examining patients in their rooms should be of a color quality that will not distort skin or tissue color, of a directionality to permit careful inspection of surfaces and cavities, and shadowless. When curtains are used to isolate a patient, others in the room are protected from the examining lamp; however, whether fixed or portable, the examination lighting should be confined to the bed area and provide adequate lighting in the center of a circular area 0.6 meter (2 feet) in diameter.

Examination lights are defined as those luminaires used for minor medical procedures outside the operating room. Examples of these procedures would be tissue examination and suture removal. The range of examination/treatment units varies from a simple "gooseneck" lamp to a luminaire having qualities similar to an operating room unit, depending on the complexity and nature of the visual task. The follow-

ing criteria should be considered when selecting luminaires for examination:

1. **Distance:** adequate illumination should be available at a distance of 1070 millimeters (42 inches). In treatment rooms, the focal length of the luminaire should be compatible with the task to be observed, typically 600 to 910 millimeters (24 to 36 inches).

2. **Radiation:** for patient safety and comfort, the luminaire should be designed with a heat filtration system. At maximum intensity, the lighting unit at a distance of 1060 millimeters (42 inches) from the field should produce no more than 25,000 microwatts per square centimeter in the field.

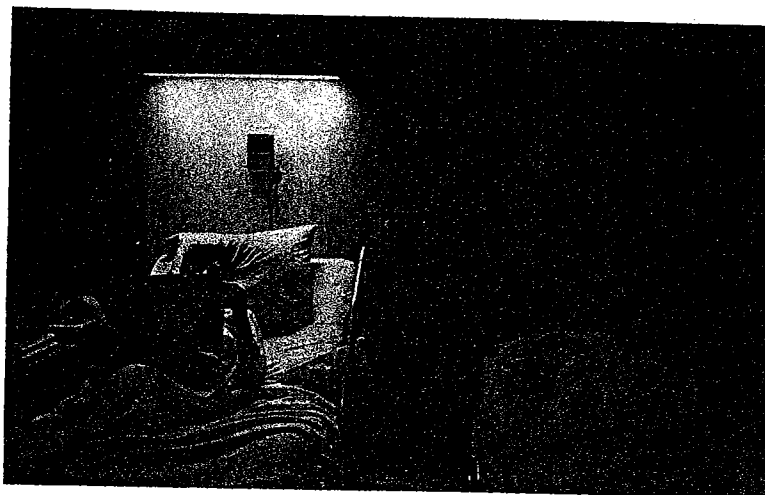
3. **Color Correction:** the luminaire should provide good color rendition of tissue. Color temperature should be between 3500 and 6700 kelvins.

4. **Mobility:** the unit should move freely and be easily positioned with one hand. Once the luminaire is positioned, the mounting system should permit it to remain stationary without drifting. Articulation of the unit should require 2.3 kilograms [five pounds] or less of force by the user.

5. **Safety:** safety of the user and patient should be addressed by considering (a) surface temperatures of the luminaire, (b) tipping-hazard, (c) electrical safety, and (d) durability of external surfaces. The placement of fixed, flexible arm units should be reviewed carefully, especially with older patients who may reach out to use the arm for support, which it will not provide.

Patient Use. Patient use implies control by the patient for reading, visiting, self-care or viewing television. This control must be limited to

Fig. 7-6. Patient room lighting in multiple occupancy accommodation. Note one patient reading while another sleeps under reduced illumination.



7-12 INSTITUTIONS AND PUBLIC BUILDINGS

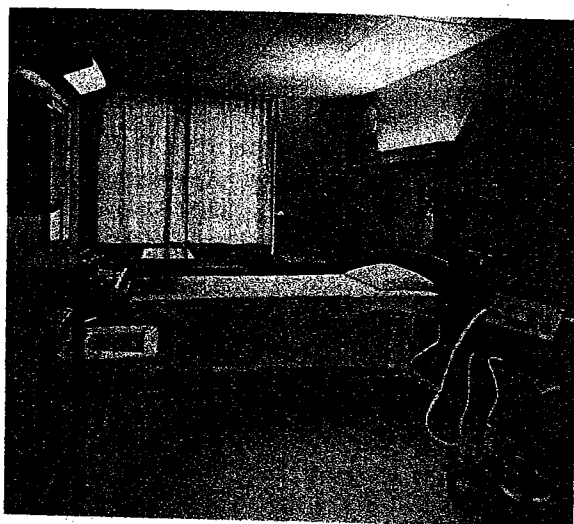
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Fig. 7-8. Critical care room. Wall brackets contain two fluorescent lamps for indirect general lighting, one fluorescent lamp as a downlight for reading, and an incandescent night-light for surveillance from the nurses' station. Two 325-watt tungsten halogen lamps in ellipsoidal reflectors are also provided for indirect examination light.

port resuscitation, hemorrhage, or any other anticipated emergency situations which can be anticipated.

The illumination should enable the observer to note (1) changes in contour and color, (2) the prominence of veins on the neck, and (3) the presence of yellow tints in the patients' eyes, if possible. Good color rendering is important so that the patients' complexion will have a true appearance. Thus, only improved color fluorescent lamps should be used. See Fig. 7-8.

While the demands for visual tasks in these units may be great, the well-being of the patient must also be carefully considered in planning. For example, the minimum requirements of construction from the Health Resources Administration (79-1450) require the provision of windows to enable *each* patient to be cognizant of the outdoor environment. Yet the provision of illumination by this means is not important.

The general lighting should be capable of being dimmed. It should be located so that neither the prone patient, nor the one sitting with an elevated backrest, will be subjected to glare. In addition to general lighting, there should be lighting for examinations by the physician. Also, some type of surgical task light should be readily available to provide higher illuminances for emergency procedures.

Most of these facilities contain a handwashing area.

The nursing station is usually fully visible to the patient, so that luminaires below the counter or shelf should be shielded.

Monitoring devices (see Fig 7-9) should be studied so that there will be adequate illumination for reading them. This also includes a review of their placement and whether or not they are internally illuminated.

Children's Section (Pediatric). The child admitted to the hospital for the first time may feel dwarfed by its huge size and depressed by the concentration of suffering. Strange equipment may be frightening and may alarm ill patients or intensify anxiety. For this reason the pediatric section or department should be provided with

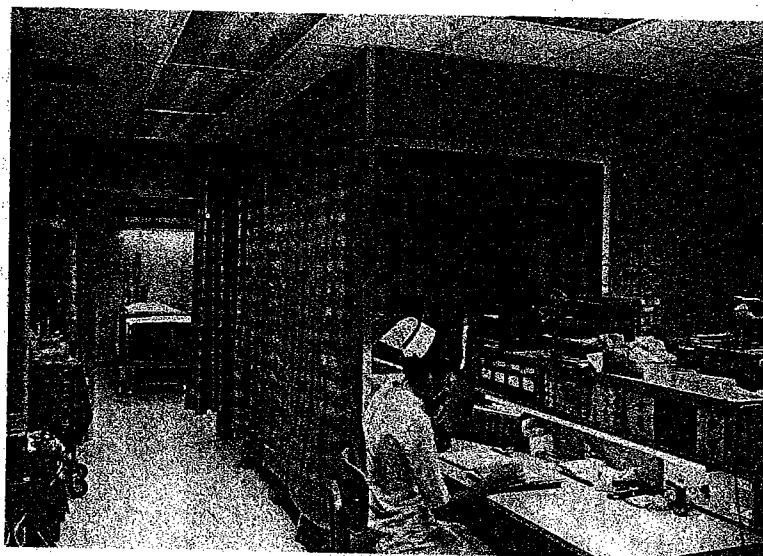


Fig. 7-9. Nursing station in critical care unit. Note the lighting beneath the counter and out of the patient's view. Also, monitoring devices are easily visible.

EXHIBIT D

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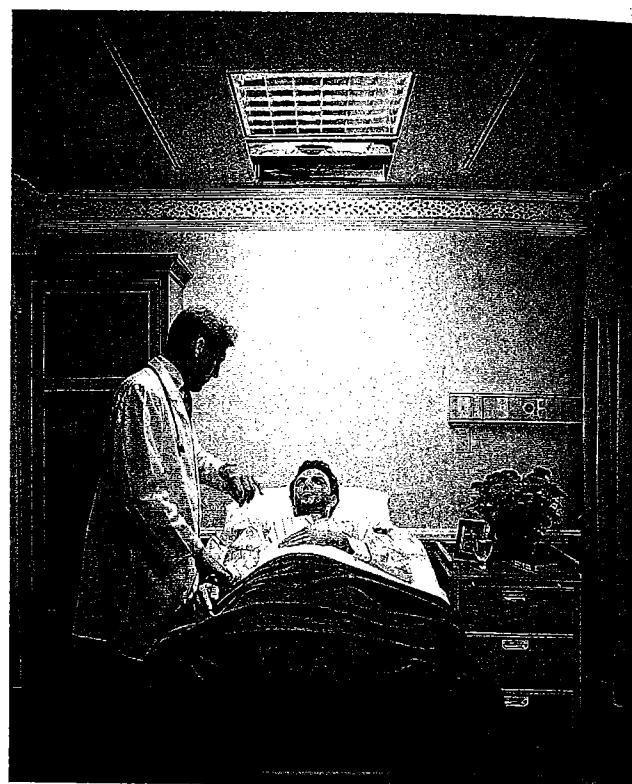
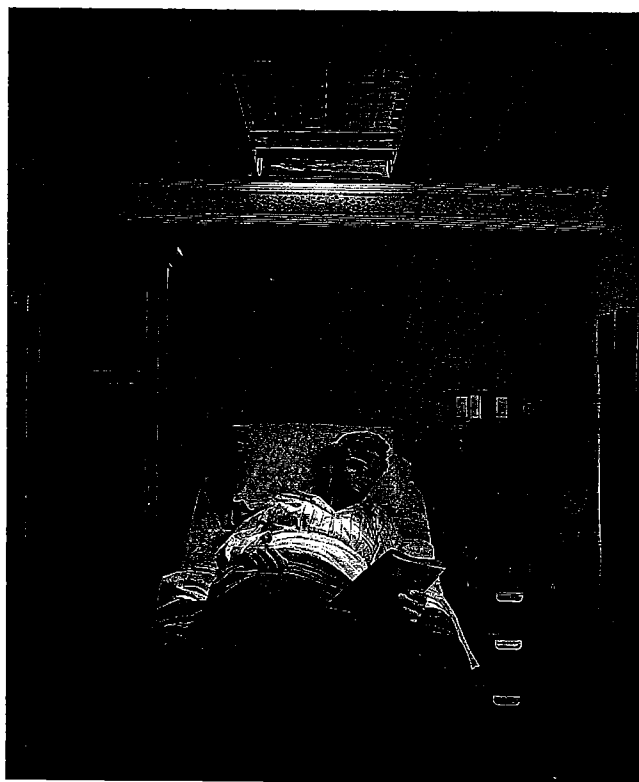


Fig. 17-7. Patient room lighting. Left: Reading light, which positions light directly onto the patient's reading material with no reflected glare. Right: Examination light, which can be controlled with a wall switch by hospital staff, utilizes compact fluorescent lamps for excellent color rendition.

lighting, should be at least equal to the illuminance in 1/p lux on the reading matter.

The luminance of the reading lamp and of any surface illuminated by it, as seen from the patient's bed or any normal reading position, should be less than 310 cd/m^2 (30 cd/ft^2). This condition is admittedly difficult to satisfy and entails a careful choice of luminaire and built-in limitations to its movement. See figure 17-7.

Housekeeping. A very important consideration is the lighting for housekeeping functions. Housekeepers need to see dust or dirt to remove it, including that beneath the furniture. Oblique lighting should be provided over horizontal surfaces to observe dust.

Nursing Stations. In most hospitals a nursing unit is coordinated around a nursing station (see figure 17-8). Here charts are stored, read and written. A desk or shelf is invariably provided, usually against some type of counter or below a hung cabinet. Lighting mounted beneath this counter should provide for the task. It should be so arranged that it supplements the overall illumination of the station.

Some of this lighting will be in continuous use, night and day, and this should be considered in the lighting plan for the station. Usually, although by no means universally, when the nursing station is not visible from any of the patient accommodations, general ceiling

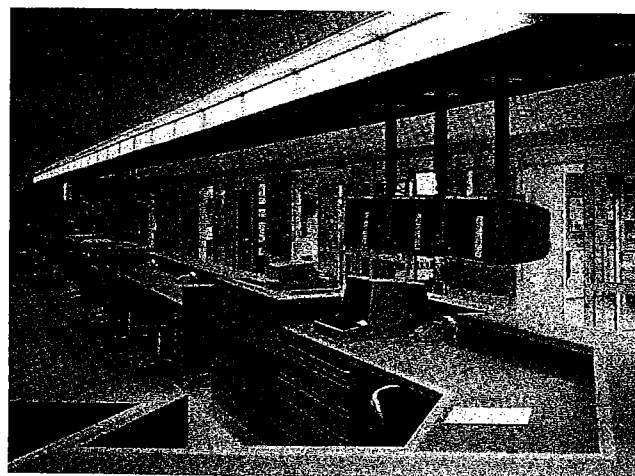


Fig. 17-8. Lighting at a nurses' station is multilevel, to allow for a higher illumination during the day and a lower level at night. The lighting is designed to allow for the critical task of reading patient information from the computer screen. Undercounter task lights also function as night lights.

sources remain lighted during the night hours. Also the luminaires beneath counters, placed so that a person sitting at the desk is shielded from glare, should not be within the patient's direct view.

As the nurse must make frequent trips from the station to patient's rooms as well as to service loca-

EXHIBIT 4

CLAIM TERM AT ISSUE	PROPER CONSTRUCTION
“means for ceiling-mounting said body”	Covers a flange and/or mounting holes, and equivalents.
“oriented to direct light”	to set or arrange to direct light
“downwardly”	a direction below the light system
“a selected reading area”	an area below the light system in which a person may read
“downwardly and outwardly”	a direction below and away from the light system
“whereby light is reflected back”	whereby light is redirected
“broad area”	a large area
“a selected patient examination area”	an area below the light system in which a person may be examined
“reflector”	a device that redirects light
“fluorescent assembly”	unit of lamps and sockets
“light distribution pattern”	the pattern of light emitted from a fluorescent light
“glare”	the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort or loss in visual performance and visibility